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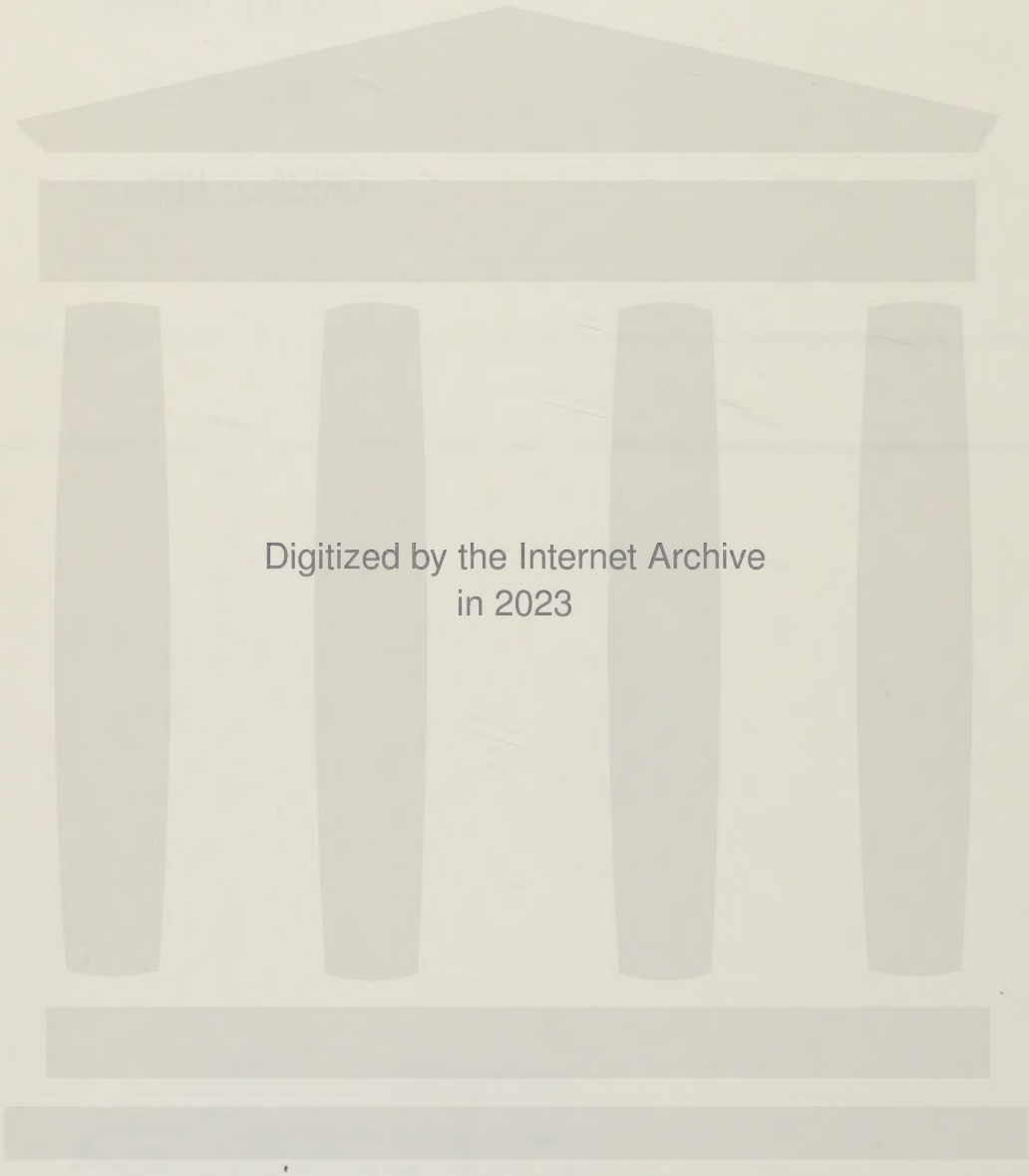

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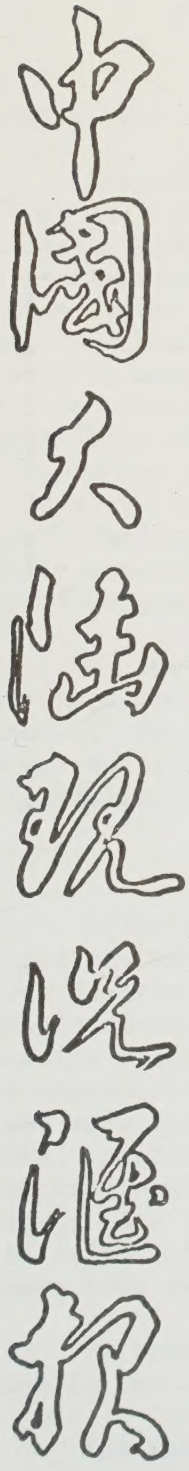

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Theory and Principles of Acupunctural Anesthesia

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Editor's Note:

Assembled in this issue of Current Background are the translations of ten more articles about the theory and principles of acupunctural anesthesia. Translations of relevant articles about acupunctural anesthesia and acupuncture can be found respectively in Current Background Nos. 940 (71-140) and 909 (70-11).

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Page

TABLE OF CONTENTS

Spots, Meridians, and the Principles of Acupunctural Anesthesia 1

The Functions of Meridians in Acupunctural Anesthesia As Seen from the Peculiarity of Spots 10

Nerves, the Body Fluid System and Ear Acupunctural Anesthesia 15

Why It Is Possible To Perform Pulmonary Resection with Anesthesia by a Single Needle 20

Why Inserting Needles into Spots Can Raise the Threshold of Pain 26

The Essence of Meridians and the Material Base of Reaction to Te-ch'i 30

Activity of the Reticular Structure of the Brain Stem and Acupunctural Anesthesia 36

Peking Hospital Medical Workers Discuss Acupuncture Anesthesia 40

The Relationship between the Functions of Meridians and Conduction through Nerves 44

Phenomena of Meridians and Acupunctural Anesthesia 51

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Spots, Meridians, and the Principles of Acupunctural Anesthesia

by

the Peking Acupunctural Anesthesia Cooperation and Coordination Unit

(Hung-ch'i [Red Flag], No. 12, Nov. 1, 1971)

Acupunctural anesthesia is a new achievement made by China's broad masses of medical workers through clinical practice in accordance with the great leader Chairman Mao's teaching, "Chinese medicine and pharmacology are a great treasure house. Efforts should be made to explore them and raise them to a higher level." On the basis of anesthesia by inserting needles in the body and the ears, medical workers have through practice further created successfully many other methods of acupunctural anesthesia, thus opening up broader prospects for acupunctural anesthesia. In the study of the theory and principles of acupunctural anesthesia, deep-going discussions are also being conducted on the nerve or the meridian (ching-lo) viewpoint, and still other ways of looking at the matter. We believe that so long as we study and apply Chairman Mao's philosophical thinking persistently, we certainly can gradually understand, through repeated practice, the scientific truth of the theory of acupunctural anesthesia.

On the basis of performing operations with acupunctural anesthesia, we have held some exploratory discussion on the principle of acupunctural anesthsia. Here we set forth our initial views on a number of questions which currently form the major points of controversy, as our contribution to the discussion.

Are There "Spots" in the Human Body?

China's method of medical treatment with acupuncture and moxibustion calls for the insertion of needles into certain regions of the human body and such positions are described by Chinese medicine as "spots." Acupunctural anesthesia developed on the basis of medical treatment with acupuncture and moxibustion also calls for the insertion of needles into certain spots to induce anesthesia. Through clinical practice, however, people have discovered more and more spots that can be used for performing operations with acupunctural anesthesia. Some have discovered that operations can be performed by inserting needles in any region of the human body. This poses a series of questions: Are there spots in the human body? Do spots have their peculiarities? Is it true that the insertion of needles into any region of the human body produces the same effect?

To answer these questions, it is essential to look back over clinical practice in the treatment of diseases with acupuncture.

The most important theory of medical treatment with acupuncture is based on the meridian theory, and the spots are the regions for inserting needles. The meridian theory holds that the spots are places close to the

surface of the body to which the "ch'i" [气 meaning energy or vital force--translator] of the "meridians" and "internal organs" is "conveyed and concentrated." Each trunk meridian (經 脉) has certain spots. Through protracted clinical practice, the laboring people in China learned that the insertion of needles into certain spots is especially effective for the treatment of certain diseases.

For example, the insertion of a needle into the "hoku" (合 谷) spot is especially effective for the treatment of toothache, and the insertion of a needle into the "tsusanli" (足 三 里) spot is more useful for the treatment of gastric and intestinal diseases. But the effect would not be good if the "hoku" spot were used to treat stomachache or the "tsusanli" spot were used to treat toothache. Therefore, the rhyme on acupuncture and moxibustion contains the words, "the abdomen is linked with the sanli spot," "the face and the mouth are linked with the hoku spot." This is a summing up of experience gained in the protracted struggle against diseases.

Through clinical practice and experimental research on animals, we have also noticed the special links between certain spots and the functions of internal organs. For example, an X-ray examination shows that the insertion of needles into the "tsusanli" spot or the "lanwei" (阑 尾) spot can strengthen the vermicular motion.

In recent years, on the basis of medical treatment with acupuncture and moxibustion, medical workers have created new methods of therapy, discovered many new spots and cured a great number of "incurable diseases," thus demonstrating the effectiveness of acupuncture and moxibustion. In these examples, the peculiarities of spots become more prominent. Comrade Chao P'u-yü's success in inserting a needle deep into the "yamen" (哑 门) spot, thus intruding the "forbidden area," shows the more pronounced peculiarity of the "yamen" spot for the treatment of the mute. Similar examples have also appeared in the treatment of victims of infantile paralysis and paraplegia. By giving the desired stimulation to certain specific spots, after a period of treatment it is possible to revive the diseased limbs that have long lost their functions.

We have also had some experience in the relative peculiarities of spots in the course of practicing acupunctural anesthesia. With respect to pneumonectomy with acupunctural anesthesia, after repeated practice, an operation can be successfully performed with the number of needles reduced from forty to one. But this does not mean that any spot can yield such a result. Even the two spots which we now commonly prescribe and use do not produce similar results--one yields more pronounced results in preventing labored breathing after the chest is cut open, while the other is more effective for suppressing pain.

In our study of appendectomy with acupunctural anesthesia, we carefully analyzed the results of more than 300 cases of operations performed with twenty kinds of spot prescriptions. We found one spot prescription that gave the best result. This prescription was used to perform more than 100 cases of appendectomy involving both acute and chronic appendicitis under conditions where anesthetists and operating surgeons were not fixed or chosen, and more ideal results were obtained in the great majority of the cases.

Again, when we performed hysterectomy with acupunctural anesthesia, the operation would sometimes be affected by the swollen abdomen due to flatulence. This could be relieved by inserting needles into the "tsusanli" spots and strengthening the stimulation.

Advanced experiences of certain units show that spasm of the diaphragm muscle encountered in splenectomy done with acupunctural anesthesia could also be promptly relieved when needles were inserted into the "hsimen" (郄门) spots. Many similar examples can be cited in the practice of acupunctural anesthesia.

The above facts explain one question, namely, the peculiarities of spots. This means that the spots have special effects on the functions of certain internal organs and regions.

To be sure, such peculiarities are only relative. All spots and internal organs and other regions have their inner common links and general laws, that is, their common character. However, each spot has in function its special connections with different internal organs and regions, that is, its individual character or peculiarity. "The universality as well as the particularity of contradictions is inherent in everything, and universality resides in particularity." Knowing this, we can understand why many spots have a specific role to play in suppressing pain in a given region. But a careful analysis shows that some spots are more pronounced in analgesic effect, and this expresses the relative peculiarities of spots to the suppression of pain.

However, because there are many factors affecting the effect of acupunctural anesthesia and there is as yet no perfect method for the objective reflection of algesia, it is therefore rather difficult to assess accurately the effects of inserting needles into different regions in suppressing pain in the same region. This objective difficulty also affects our knowledge of the relative peculiarities of spots.

In short, we are of the opinion that as far as medical treatment with acupuncture and acupunctural anesthesia is concerned, there are spots in the human body. This refers to the special relations of specific regions of the human body with the internal organs and other regions in regard to structure and function. Through such relations, the stimulation of certain regions of the human body can react on certain internal organs or certain regions. Consequently, as far as the effect of acupunctural anesthesia is concerned, the selection of spots for insertion of needles is a more important factor.

How Should We Look at Meridians?

Since the relative peculiarities of the spots reflect the existence of certain special relations between the various regions of the human body (including those between different sections of the surface of the body, between different internal organs, between the body surface and internal organs), how can such relations between different regions of the

human body be effected? There are two ways of looking at this question: the meridian theory of Chinese medicine holds that such relations are effected through the meridians, while modern physiology holds that such relations are mainly effected through the nerves.

In its protracted struggle against diseases, Chinese medicine discovers that the ailment of a certain internal organ is frequently reflected at certain regions on the surface of the body, and that the action on certain spots on the body surface of acupuncture and moxibustion produces a more pronounced therapeutic effect in treating the diseases of certain regions or a certain internal organ. Based on such clinical experience, Chinese medicine holds that there is a special connection between certain regions on the surface of the body, and between these regions and certain internal organs. Such a connection is routed through what are described as the meridians. There are twelve principal meridians which connect all internal organs with the different regions on the surface of the body and make a unified whole of the human body.

Modern physiology also confirms that the human body is a unified whole and that various regions are connected with one another according to certain laws. But it holds that such connection is mainly realized through the nerves. For example, because the nerves distributed in a certain internal organ and the nerves controlling a certain section of muscle on the surface of the body enter the spinal marrow at the same level, when disease occurs to this internal organ, it may be reflected at the corresponding region on the surface of the body.

So, the question naturally arises: What is the relationship between the meridians and the nerves?

We compared and analyzed the results of the practice of acupunctural anesthesia and its relationship with the control of the nerves. When appendectomy, hernioplasty or other operations on the peritoneal cavity were performed, the insertion of needles into certain "yü spots" (俞穴) on the back or the injection of ligusticum solution yielded better results in relieving reaction to visceral traction. When we compared the afferent level of the nerves of various internal organs with the position of the "yü spots" of the various internal organs in the meridian theory, we discovered that many "yü spots" lay close to the afferent level of the nerves of the internal organs bearing the same names. This shows that the relationship between the body surface and internal organs in the meridian theory reflects at least partially the laws governing the control of the branch nerves. When we recall that "all meridians lead up to the brain" as recorded in the Chinese medical journal, we are reminded that meridians and nerves are consistent with each other to a considerable extent.

However, some of the laws governing the ties between the various regions of the human body as generalized by the meridian theory are still difficult to explain with our physiological knowledge of neuro-anatomy. For example, according to the meridian theory, the "kuangming" (光明) spot

at the lower end of the shank is a vital spot for the treatment of eye diseases. We have achieved relatively good results by using this spot to induce anesthesia in eye operations. But how does the insertion of a needle into the "kuangming" spot react on the eyes and in what way are these two regions connected? It is rather difficult to explain this with our present knowledge of neuro-anatomy and neurophysiology. In addition, in our work to probe the principle of anesthesia by inserting needles into the ears, we have discovered that the spots on the ears for inserting needles also have their relative peculiarities. When certain regions of the limbs are stimulated with heat or light to cause pain, a sensation of pain promptly appears in the corresponding regions on the ears, suggesting that the spots on the ears have also their relative special relations with other regions of the human body. It is also hard to explain these ties with our present knowledge of neuro-anatomy and physiology.

Since the meridians are closely related with the nerves and since it is difficult to use our present knowledge of neurophysiology to explain completely all phenomena summed-up by the meridian theory, what are meridians after all? According to "Nei-ching" (内經), meridians are the channels through which oxygen and blood are circulated to maintain the activities of the human body, and their functions consist of supplying the human body with nutrition, insuring normal activities of the human body, linking various regions of the human body into a unified whole, and regulating the balance of various physiological functions to accommodate changing external environments. Based on their initial practice of anatomy, the ancients divided the meridians into trunk meridians (ching-mo 經脉) and branch meridians (lo-mo 絡脉). The trunk meridians are buried in the muscles "so deep that they cannot be seen," while the branch meridians are spread over the surface of the body and can be seen. According to Chinese medical records concerning the functions and morphology of the meridians, the meridians probably include the nerves, the blood vessels, the endocrine glands and some of their functions. But no matter whether you use nerves or blood vessels you cannot explain completely the laws governing the links between various regions of the human body in the meridian theory. Consequently, we believe that the meridians have a material basis; they include not only the nerves and blood vessels but probably certain ways of combination and laws of activities within the human body that are still unknown to us. However, the meridians may not necessarily form a unique system because the functions of the various systems of the human body are very complicated. Speaking of the nervous system alone, our knowledge of its structure or functions is still rather limited and incomplete at present.

Both the meridian theory and modern neurophysiology take the structure and functions of the human body and the laws governing their interconnections as objects of study, and both have proved in practice that they reflect correctly certain objective laws of the human body. For this reason, the meridian theory and the knowledge of neurophysiology are not opposed to each other. They probably come to the same conclusion by different roads. However, due to limitations imposed by time, the meridian theory is too generalized and in some ways is not entirely consistent with objective

realities. On the other hand, modern physiology also has certain metaphysical things. Chairman Mao teaches us: "In the long river of absolute truth, man's knowledge of a particular process at any given stage of development is only relative truth." Hence, at a given stage of development of natural science, a concrete scientific principle known to man is only relative truth. We must avoid thinking in absolute terms. We can neither regard the knowledge of modern neuro-anatomy as something absolute and adopt the attitude of rejecting the meridian theory in general nor make the ancient meridian theory absolute, apply it blindly and inherit it wholesale. We should collate and unearth the quintessence of the meridian theory with modern scientific knowledge and technical methods. Proceeding from the rich experience gained in the clinical practice of acupuncture and moxibustion and acupunctural anesthesia, we should probe the substance of the meridians and push the development of modern physiology.

Why Can Operations Be Performed with Acupunctural Anesthesia?

A surgical operation that begins with the cutting open of the skin and muscles and ends with the sewing up of the incision which can be several decimeters in length after the diseased tissues of the internal organ are removed, can last as long as several hours or even more than ten hours. This causes a heavy trauma to the body and the intensity of stimulation is very great. Why is it that a few small needles inserted into the spots have such power as to permit the patient not to feel pain or to feel only a little pain during an operation?

Acupunctural anesthesia achieves the effect of anesthesia by inserting needles at certain spots. Consequently, in order to know acupunctural anesthesia and study the principles of acupunctural anesthesia, it is first necessary to understand the physiological effects that are mainly produced by inserting needles into the spots.

The physiological effects produced by inserting needles into spots have been verified by Chinese medical workers and scientists with modern scientific methods. They are generalized into two major effects.

First, the effect of suppressing pain. A mass of data from clinical practice shows that the insertion of needles into spots is very effective in stopping pain. The insertion of needles into spots or the pressing of spots for treating toothache, headache, pain in the loins or legs and stomachache often produces the effect of "removing the ailment as soon as needles are inserted." Results are also rather pronounced when needles are inserted into spots for treating post-operation pain. We conducted repeated tests with the method of measuring pain on ourselves and some persons of normal health. As a result, we observed from more than 100,000 tests that the insertion of needles into the "hoku" and other spots can blunt the sensation of pain in certain regions of the body. After needles are inserted into these spots, it takes much stronger stimulation to produce the sensation of pain than before. This direct experience makes us aware that the insertion of needles into spots can not only stop but also prevent pain.

At the same time, the reason why the insertion of needles into spots is so effective is that besides its function to prevent pain, it plays a regulating role, which, as recorded in "Nei-ching," is to "speed up circulation in the trunk meridians and adjust the supply of oxygen and blood." In point of fact, the regulating role is the preponderant role of medical treatment with acupuncture. It can restore normalcy to the abnormal functions of the human body. In clinical practice, we have constantly noticed that the insertion of a needle into the same spot can stop diarrhea and cure constipation. Hearts that beat too fast can be made to beat slower, and hearts that beat too slow also can be restored to the normal rate. The insertion of needles can treat high blood pressure as well as low blood pressure. For another instance, the insertion of needles into spots works well in the treatment of certain cases of inflammation. Experimental research shows that after needles are inserted into certain spots of normal persons or animals, the number of white blood-cells can be increased and made to play a stronger role in devouring the germs. We believe that the role of inserting needles into spots to prevent pain and its regulating role are inter-connected and that the two react on each other. It is precisely due to these effects that the physiological functions of the patient's body can reach a new level, thus increasing his power of endurance when operated on and reducing his sensitivity to pain. Under acupunctural anesthesia, besides the disappearance or reduction of the sensation of pain, the patient is fully conscious and can endure the enormous stimulation of the operation. This is the characteristic of acupunctural anesthesia.

Insertion of needles into specific spots not only plays a more pronounced role in preventing the sensation of pain at certain regions of the body. It also plays a tranquilizing role and the role of regulating certain functions of the body. When these roles are combined, they are capable of overcoming great pain and physiological disorder caused by the operation. We think that this is the reason why so small an amount of stimulation produced by acupuncture can overcome so strong a stimulation caused by the trauma of the operation.

"Man's knowledge, whether of nature or of society, also develops step by step from a lower to a higher level, that is, from the shallower to the deeper, from the one-sided to the many-sided." If we think that acupunctural anesthesia is the result of a combination of functions--the pain-prevention function and the regulating (including tranquilizing) function--produced by inserting needles into spots, we should further study the regions of the body in which such functions work.

Since the patient under acupunctural anesthesia is still conscious, any sensation will necessarily be transmitted to the cerebrum. The cerebrum is the general headquarters in control of the human body, and it plays the leading role in regulating the functions of the body. The sensation produced by the insertion of needles into the spots and the sensation of pain caused by the stimulation of the operation will necessarily be transmitted to the cerebrum, which will react to them. At the same time, the tranquilizing role of acupuncture comes into play mainly on the cerebrum, and it also can

strengthen the pain-prevention role. We believe that the cerebrum constitutes the preponderant region for the struggle and mutual reaction between this pair of opposites--the insertion of needles into spots and the stimulation of pain caused by the operation.

We have carried out experimental research on animals in order to prove the role of the cerebrum in acupunctural anesthesia. When a specific region of the body of the animal is stimulated by pain, the appearance of a pronounced change in the electric waves of the brain can be noticed at a certain region of the cortex--region of the highest layer in the cerebrum. When needles are inserted into different spots, another form of change in the electric waves of the brain can be noticed. When we simulate clinical practice of acupunctural anesthesia first with needles and then with stimulation of pain, we can see that the change in the electric waves of the brain caused by the insertion of needles into spots is capable of entirely suppressing or markedly weakening the change in the electric waves of the brain caused by the stimulation of pain. Such a role may vary with different spots into which needles are inserted, and this further shows the relative peculiarities of the spots. We believe that the principle of acupunctural anesthesia is related to this. Experiments also show that similar phenomena can also be observed at the various levels and regions of all layers of the brain below the cerebrum. Therefore, the role of acupunctural anesthesia is related to the centers of all layers of the brain, possibly with other factors, for example, the body liquid, playing a part. However, as acupunctural anesthesia is applied to the patient in a conscious state, we must bring into play the leading and regulating role of the cerebrum in relation to the whole body.

A patient under acupunctural anesthesia is fully conscious; this insures that he can bring his subjective dynamic role into play and cooperate with the medical workers during the operation. This cannot be done with any other method of anesthesia. For example, when a brain operation is carried out to remove a tumor of the auditory nerve, other nerve tissues can be hurt easily by mistake when anesthetic is used, and grave accidents may even occur. But when acupunctural anesthesia is used, the operation can be performed most accurately with the cooperation of the patient, and the danger of hurting other brain tissues by mistake is avoided.

We know that the mental state of a person affects to a certain extent the stimulation coming from sense organs. When a person is in a positive mental state, the sensation of stimulation can be reduced and hence the threshold of pain can be raised. The stability of the thought and feeling of the patient and the bringing of his subjective dynamic role into play may improve the effect of acupunctural anesthesia.

However, we should know that it is not the subjective dynamic role of the patient alone that makes acupunctural anesthesia function. The subjective dynamic role of the patient alone cannot take the place of acupunctural anesthesia in an operation. Both have their material basis and can raise the threshold of pain through their own functions.

We once came across this case: a medical worker suffering from tuberculosis had to undergo a pneumonectomy. However, she expressed doubt about the possibility of performing such a major operation under acupuncture anesthesia. After a needle was inserted into a spot in her body and the operation began, the unexpected result led to complete disappearance of her tension and fear. She remained calm throughout and took the initiative to cooperate with the surgeon. As a result, the operation was a great success. The operation over, she was so excited that her eyes were filled with warm tears and she cried: "Long live the great leader Chairman Mao!" After she was brought back to the ward and until her discharge, she was full of spirits all the time and used her experience to publicize the great victory of Mao Tsetung thought. This example--from being haunted by acupuncture anesthesia to taking the initiative to publicize acupuncture anesthesia--fully shows that during an operation with acupuncture anesthesia, the role of anesthesia induced by inserting needles into spots and the two positive factors brought into play--that is, the physiological role of inserting needles into spots and the mental factor--are unified and mutually complementary. In order to improve the effect of acupuncture anesthesia, it is imperative to integrate closely these three things--the conditions of acupuncture anesthesia, the operation done by the surgeon and ideological work for the patient--into a organic whole.

"Often, correct knowledge can be gained only after many repetitions of the process leading from matter to consciousness and then back to matter, that is, leading from practice to knowledge and then back to practice." We have just begun our study of the principles of acupuncture anesthesia. In accordance with Chairman Mao's policy of "letting one hundred flowers blossom and one hundred schools of thought contend," we have put forward some crude views. It is inevitable that our views are one-sided and even erroneous in many respects. There is need for us to study and apply Chairman Mao's philosophical ideas further and repeat our practice so as to continuously increase our knowledge of the principles of acupuncture anesthesia.

The theoretical research in acupuncture anesthesia involves many questions that have still not been answered by modern medicine and the relevant branches of learning in biology. It also involves the essence of the meridian theory in Chinese medicine. Furthermore, it is closely related to further improving the effect of acupuncture anesthesia. At present, people still have no adequate understanding of the structure and functions of the human body. They are still unable to explain satisfactorily certain phenomena in acupuncture anesthesia, and they lack all-round knowledge of the meridian theory and certain relevant theories in Chinese medicine. This requires us to conduct deep-going and careful scientific research with materialist dialectics, and through many repetitions of "the process leading from practice to knowledge and then back to practice," we can draw correct conclusions only in the process of gradually perfecting acupuncture anesthesia.

"We are undertaking a most glorious and great task never attempted by our predecessors." "Our goal must be attained." "Our goal will be attained."

* * *

The Functions of Meridians in Acupunctural Anesthesia As Seen from the Peculiarity of Spots

by

the Anesthesia Unit of the No. 3 Hospital attached to the Peking Medical College and the Unit for Conducting Research in the Theory of Acupuncture Anesthesia of the Peking Medical College

(Peking Kuang-ming Jih-pao Nov. 23, 1971)

Acupunctural anesthesia is a new achievement made by Chinese medical workers who have firmly taken the road of combining traditional Chinese medicine with Western medicine and earnestly explored and developed the medical science of the fatherland in accordance with the great leader Chairman Mao's teaching, "Chinese medicine and pharmacology are a great treasure house. Efforts should be made to explore them and raise them to a higher level." In the past few years, we studied the experience of fraternal units, and used acupunctural anesthesia to perform with good results close to 90 types of surgical operations--totalling more than 4,900 cases--in surgery, gynecology and obstetrics, ophthalmology, and otolaryngology. A great deal of clinical practice shows that acupuncture plays the role of the sedative and analgesic and of regulating the functions of organisms. As to why acupuncture can produce these actions--that is, the principles of acupunctural anesthesia, the units concerned have conducted some research work in the spheres of neurology, body fluid and meridians. Based on clinical experience, we present some initial views on this question.

Grasp the Peculiarity of Spots, Improve the Effect of Acupunctural Anesthesia

In order to perform a surgical operation with acupunctural anesthesia, it is first necessary to solve the question of into which spots needles are to be inserted. At first, with reference to the clinical experience of acupunctural anesthesia and in accordance with the principle of "picking the spots along the meridians" in Chinese medicine, we selected certain spots on different occasions for performing different types of surgical operations and were successful. In sympathy with the widespread development of acupunctural anesthesia everywhere throughout the country, great headway has been made in the prescription of spots and the kinds and methods of acupuncture. One type of surgery can be performed with diverse prescriptions of spots, and the same kind of prescription of spots can be used to perform many types of surgery. This poses a question for us: When different prescriptions of spots are used to perform the same type of surgery, is the effect of anesthesia the same? Is there any difference in the effect of anesthesia when the same prescription of spots is used for performing surgery on different parts of the body? We are of the opinion that in order to solve this question, it is necessary to determine whether or not such spots have a peculiar character, that is to say, whether or not a given spot has certain characteristics when used as an analgesic or for other aspects of medical treatment.

In accordance with Chairman Mao's teaching that "man's knowledge cannot in the least be alienated from practice," we selected the common ailment of appendicitis for exploration. We prescribed at different times nearly ten sets of spots for performing more than 150 appendectomies. We discovered that some prescriptions yielded good results, while some prescriptions produced poor results. On one occasion, we selected three pairs of spots in the lower limbs for performing an appendectomy, and decided to emphasize the stimulation of one to two pairs of spots among them when handling the viscera, but the stimulation of another pair of spots when handling the skin and body tissue. However, after the peritoneum was closed, because we had not switched to other spots at the right time, the patient complained of pain. After we changed the spots and stimulated them, the patient had no more sensation of pain. This situation helped us see that the analgesic action at a given spot may have certain peculiar characteristics.

"What is perceived cannot at once be comprehended and only what is comprehended can be more deeply perceived." In order to understand further the peculiarity of spots, we selected the ear spots and several sets of spots on the body, and used the algometer to determine changes in the sensation of pain before and after inserting needles into different parts of our own bodies and those of a number of normal persons. We noticed that the insertion of needles into these few sets of spots could raise the threshold of pain, and this was the common character of these spots. However, other spots among them could make a certain region of the body conspicuously raise its threshold of pain, and this was the individual character of such spots. This confirmed experimentally that a given spot possesses a given peculiarity as to analgesia through acupuncture. To be sure, such a peculiarity is relative.

"The active function of knowledge manifests itself not only in the active leap from perceptual to rational knowledge, but--and this is more important--it must manifest itself in the leap from rational knowledge to revolutionary practice." After the peculiarity of spots was learned, we applied such knowledge in clinical practice. On the one hand, to cope with abdominal pain in some patients suffering from ulcers, intestinal obstruction, bile duct troubles, appendicitis, etc., or pain caused by the incision after surgery, we selected certain spots to induce analgesia through acupuncture. The majority of patients obtained good results. On the other hand, we further revised our prescribing of spots and the method of stimulation for performing an appendectomy, and used two pair of spots and four needles. Without fixing the number of anesthetists and operating surgeons, we performed at different times appendectomy for more than 100 cases of acute and chronic appendicitis, and the rate of success rose to 91 percent compared with 75 percent in the past. Such knowledge that spots possess a peculiar character has thus been examined in practice.

The Principles of Acupunctural Anesthesia as Drawn from the Peculiarity of Spots

The relative peculiarity of spots has been confirmed not only in the clinical practice of acupunctural anesthesia but also by the essential elements "choosing the spots along the meridians" as recorded in ancient writings on

acupuncture--"the abdomen is linked with the san-li spot"(肚腹三里留), "the loins and the back are linked with the wei-chung spot" (腰背委中求), and "the face is linked with the ho-ku spot" (面口合谷收). Guided by Chairman Mao's brilliant philosophical thought, the new acupuncture therapy developed during the great proletarian cultural revolution has greatly enriched and developed the science of acupuncture and moxibustion, and at the same time deeply embodies the dialectical materialist principle that the selection of certain spots for effective stimulation yields results in the medical treatment of different kinds of diseases. In this connection, an outstanding example was found in Comrade Chao P'u-yü, a doctor of the People's Liberation Army, who inserted a needle deep into the ya-men spot (哑门), broke through the "prohibited area" of the deaf and dumb, and enabled deaf-mutes to utter the very loud cry, "Long live Chairman Mao!" This vividly shows that the ya-men spot has a strikingly peculiar character in the aspect of treating the dumb.

We are of the opinion that the very fact of the peculiarity of spots reflects the objective existence of the phenomena of meridians. For example, in the treatment of headache, if a needle is inserted merely into the aching region, the result is often not very satisfactory. If in addition to choosing spots in the affected region we also abide by the principle of "choosing spots along the meridians" and choose spots along the relevant meridians at the limbs below the elbows or the knees that lie farther away from the aching region, the efficacy of the treatment can be more pronounced. This not only confirms that "main treatment can be given where the trunk meridians reach" but also shows the objective existence of the phenomena of meridians. Many striking examples are also available in the clinical practice of acupunctural anesthesia.

For example, when we use a certain spot at the medial part of the shank for performing an appendectomy, there is a stronger response to te-ch'i (得气)* and the result is quite good. Viewed from the circulation of the meridians, this spot lies at the intersection of the tsu-chüeh-yin trunk meridian of the liver (足厥阴肝经) and the tsu-t'ai-yin trunk meridian of the spleen (足太阴脾经). The stimulation of this spot can play the role of stimulating the trunk meridian of the liver and the trunk meridian of the spleen at the same time. Both these trunk meridians pass through the lower part of the abdomen and are closely connected with the viscera.

Again, when we inserted needles into certain spots along the trunk meridian of the stomach at the lateral part of the shank for patients suffering from (chronic) appendicitis, some patients told us that the sensation of te-ch'i was conducted upward along the lateral part of the lower limb to the right side of the lower part of the abdomen. The effect of anesthesia was even better with patients who had such a sensation.

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* Te-ch'i (得气) means the acquirement of vital energy. It indicates that the merdians are in action, and to make acupuncture effective, this sensation is essential. - CB Ed.

The response to such stimulation reveals that the route followed is different from the routing of the nerves in the lower limb, but is identical with the route followed by the tsu-yang-ming trunk meridian of the stomach (足陽明胃経) along which these spots lie. It is rather difficult to satisfactorily explain these phenomena with the present-day knowledge of physiology and anatomy. There are many similar cases.

When performing an operation for the removal of the greater part of the stomach with acupunctural anesthesia, some patients reacted to visceral traction, but when treated with ear acupuncture, the reaction to traction could be alleviated. The hearts of some patients suffering from hyperthyroidism beat at a faster rate during or after an operation, and they felt annoyed and uncomfortable, but when needles were inserted into certain spots, these symptoms quickly subsided.

A good deal of clinical practice shows that the phenomena of meridians are in objective existence, and they follow their own routes and have their own functions of conduction. Therefore, we are of the opinion that the principles of acupunctural anesthesia can be envisaged in this way: After needles are inserted into the spots, such stimulation is conducted and routed through the meridians for regulating the functional activities of the organs being operated on as well as the organs in other parts of the body, thus inducing a state of analgesia and sedation and the regulation of the organic functions. Both acupunctural anesthesia and the acupuncture-moxibustion therapy show that although there is a connection between the meridian system and the nervous system, the two are not one and the same thing.

For example, according to the medical theory of "meridians" and "visceral phenomena" of the fatherland concerning the knowledge of ear acupuncture therapy, it is thought that there are regions representing different parts of the body (including the limbs and the internal organs) on the ears of man. When ailment develops in a certain region of the body or a certain internal organ, it is revealed by the corresponding representative region on the ear. Likewise, the insertion of a needle into a given representative region on the ear can treat the ailment of the corresponding region of the body or internal organ. Speaking from the angle of physiological anatomy, certain nerves are distributed in the ears. Is it through the stimulation of these nerves that the remedial goal is attained? We have made laboratory observation of the auricles of some normal persons and discovered that of the stimulation spots that give stronger response clinically and better therapeutical results, some are very rich in the nerve endings of local blood vessels but some are not, and furthermore, these nerve endings also do not directly lead to the regions of the body or internal organs represented by their representative regions in the ears. Seen from this, the phenomena of meridians and the theory of meridians are questions worthy of penetrating exploration and study.

Although the independent existence of the meridian system has still not been discovered at present, the functions of the meridians are objective phenomena that brook no denial. The functions of the meridian system embrace

not only many functions which can be explained by the contemporary knowledge of anatomical physiology, but also many functions that cannot be properly explained with the existing knowledge of anatomical physiology. We therefore feel it necessary to conduct in-depth research in and to sum up and improve the knowledge of acupuncture and moxibustion and the meridians with modern scientific knowledge and scientific methods so as to further guide the clinical practice of acupunctural anesthesia and acupuncture-moxibustion therapy. If we limit ourselves to the use of the existing knowledge of anatomical physiology to explain the appearance of all phenomena in present-day acupunctural anesthesia or treatment with acupuncture and the whole content of the theory of meridians in Chinese medicine, our knowledge will be of a nature that is localized and one-sided. We believe that through discussion and study, we certainly will greatly enrich and develop the contemporary knowledge of physiology, anatomy and other branches of learning, give impetus to the more proper combination of traditional Chinese medicine and Western medicine, and make contributions toward creating and developing China's new medicine.

"In the fields of the struggle for production and scientific experiment, mankind makes constant progress and nature undergoes constant change; they never remain at the same level." The structure and functions of the human body are extremely complicated, and although modern medicine and traditional Chinese medicine have accumulated rich experience in regard to the structure and functions of the human body, there are still many "unknown factors" waiting for further study and solution. The views on acupunctural anesthesia and its theory and principles discussed above are only skin-deep and may be incorrect in many respects. We are resolved to seriously study Chairman Mao's philosophical thought, go deeper in the study of the principles of acupunctural anesthesia, improve the skill of acupunctural anesthesia, and contribute our share of strength toward creating China's new unified medicine and give better service to the people.

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Nerves, the Body Fluid System and Ear Acupunctural Anesthesia

by

the Research Unit in Ear Acupunctural Anesthesia of the Nanking Units of the Chinese People's Army

(Peking Kuang-ming Jih-pao Nov. 23, 1971)

Acupunctural anesthesia has been developed by the revolutionary medical workers of China on the basis of making extensive use of the acupunctural therapeutics under the guidance of Chairman Mao's proletarian line in medical and health work. It is another case in point of the combination of traditional Chinese medicine and Western medicine, a new victory for materialist dialectics. Dialectical materialism holds that all things in the universe are constantly in motion and developing. Man's knowledge of the conception and development of diseases and his ability to overcome diseases are also constantly developing and advancing. Guided by Chairman Mao's brilliant philosophical thought, the broad masses of medical workers, through repeated practice, have not only made extensive use of the traditional acupunctural therapeutics for the treatment of different kinds of diseases, but have also created acupunctural anesthesia.

We are going to discuss here some initial views on the principles of acupunctural anesthesia on the basis of our own practical experience.

Acupuncture Gives Impetus to the Struggle of Contradictions within the Human body

In the past two years and more, as far as choosing spots for the practice of acupunctural anesthesia on the ear was concerned, we went through a process leading from what was complicated to what was simple. At first, based on the theory of visceral phenomena of traditional Chinese medicine, we combined the clinical therapeutic experience with choosing spots in the corresponding regions, moved from prescribing one spot for one kind of surgical operation to prescribing diverse spots for it, and then made gradual progress toward the prescription of a set of spots for performing diverse surgical operations. Subsequently, we studied the experience of fraternal units, picked a random spot on the auricle, inserted a needle into it or passed a weak electric current through it, and obtained similar results. This inspired us to think: Why is it that the analgesic effect can be produced for surgery irrespective of the number of needles inserted into the right or wrong spots?

The great leader teaches us: "The world outlook of materialist dialectics holds that in order to understand the development of a thing we should study it internally and in its relations with other things; in other words, the development of things should be seen as their internal and necessary self-movements, while each thing in its movement is interrelated with and interacts on the things around it." "External causes are the condition of change and internal causes are the basis of change, and external causes become operative through internal causes." The analgesic function of acupuncture is produced with acupuncture as the external factor and the

development and changes of the contradictions within the human body as the internal factors. This is to say that the analgesic function is produced due to a series of changes within the human body through the action of the needle, the electric current or other stimulants on the human body.

The existence of nerves and the body fluid system and their functions constitute the material base that gives rise to internal changes in the human body due to the action of acupuncture.

Taking acupunctural anesthesia of the ear for example, according to what we know of modern anatomical physiology, the auricles are richly endowed with nerves. There are the great auricular nerves, the minor occipital nerves and the major occipital nerves from the spinal volumn, the auriculotemporal nerves, the facial nerves and their branches--the posterior auricular nerves, the aural branch of the vagus nerves, etc--from the trigeminal nerves of the cranial system, which criss-cross and overlap one another. This is analogous to the claim by China's ancient men of medicine that "all arteries and veins converge in the ears." The majority of the points of reaction (spots) in the auricles are distributed along the pathways of nerve branches. Generally speaking, most of the points of reaction of the corresponding regions of the viscera in the auricles are in the region where the cranial nerves are distributed, while most of the points of reaction of the corresponding regions of the four limbs and the trunk in the auricles are in the region where the spinal nerves are distributed. For example, the points of reaction of the corresponding regions of the stomach, the cardia and the small and large intestines in the auricles are in the vicinity of the aural branch of the vagus nerves, while most of the points of reaction of the corresponding regions of the heart, the lungs, the liver, the pancreas, etc., in the auricles are in the vicinity of the facial nerves and posterior auricular nerves.

These characteristics of the distribution of nerves in the auricles make it possible for us to set off a reaction no matter what point in the auricles is stimulated. The symptoms of such reaction are that subjectively, the patient feels sore, distended, heavy and numb, and objectively there is congestion in the region stimulated and even in the whole of the auricle. Experiments show that there is also an increase of white blood cells (in the case of patients with high reaction to inflammation and white cell count, reduction can be effected); bacteriophagy is intensified, and the acidophilous leukocytes and the hydrogenated cortical substance are strengthened. Besides, under ear acupunctural anesthesia,the blood pressure of patients suffering from traumatic shock, alimentary canal bleeding, low blood pressure and high blood pressure can be kept relatively stable during surgery--those with high blood pressure can be lowered and those with low blood pressure can be raised. These phenomena show that the analgesic, antiphlogistic, sedative and regulative functions of acupunctural anesthesia are effected through regulating the nerves and the body fluid system.

Before surgery, the local reaction produced by acupuncture is conducted through the nerves and the body fluid system to the corresponding regions of the cerebral cortex. This gives rise to a corresponding response, and in sympathy with the incessant intensification of the amount of stimulation received at the point of stimulation, the inhibition of the peripheral

region of the responding point is aroused into resisting the reaction conducted from the point of stimulation. Such inhibition is the result of the interrelations and interstruggle of this pair of contradictions--the point of stimulation and the responding point, that is, the acupuncture point and the cerebral cortex. Meanwhile, due to the regulative action of the cerebrum, the sensation of pain declines or disappears in the other regions of the body stimulated, thus producing effective analgesic action. This is the result of the interrelations and interstruggle of the cerebral cortex and other regions of the human body. Under such action, although the amount of stimulation caused by the subsequent surgery (the incising, cutting, sewing, piercing, etc.) greatly exceeds that caused by acupuncture, it still occupies the place of a contradiction of secondary importance. The principal contradiction and the principal aspect of the contradiction are still the analgesic action caused by the stimulation of acupuncture. This is the principle of analgesic action produced by acupunctural anesthesia.

Chairman Mao points out: "The relationship between the universality and the particularity of contradiction is the relationship between the general character and the individual character of contradiction."

We have discovered that stimulation at any point on the human body can produce reaction to the stimulation, and this is the general character of all regions of the human body as well as the universality of contradiction. There is no striking difference in analgesic effect between our inducing anesthesia by means of electrodes without spots and our inducing anesthesia by means of electrodes with spots. In this sense, the description of anesthesia without spots is analogous to the rationality of traditional Chinese medicine in saying that "there are spots in every inch." However, the reaction produced is not entirely the same after different points in different regions of the human body are stimulated. This is to say that the stimulation of a certain point is capable of producing a particular reaction at a specific corresponding region, and this is the individual character of different points in different regions of the human body as well as the particularity of contradiction.

For example, when needles are inserted deep into the spots of the sympathetic and adrenal glands in the auricles, the sensation of acupuncture is stronger than at other spots. When a needle is inserted into the spot at the throat, the sensation of acupuncture varies with the direction in which the needle is inserted. When the needle is inserted upward, the sensation of acupuncture radiates toward the forehead, and when it is inserted downward, the sensation of acupuncture is conducted toward the throat. Speaking in this sense, it should be affirmed that there are spots. There is a reasonable basis for the claim that "pain is identified with the shu spot (腧)" in traditional Chinese medicine.

We are therefore of the opinion that to study seriously Chairman Mao's philosophical thought, to implement the combination of traditional Chinese medicine with Western medicine and to study further the relationship between the nerves, the meridians and the spots is of great importance toward guiding our discovery of more spots and points of stimulation with special analgesic effect and toward overcoming the defects found in present-day acupunctural anesthesia.

Solve the Principal Contradiction of Acupunctural Anesthesia with All-Out Efforts

Chairman Mao teaches: "There are many contradictions in the process of development of a complex thing, and one of them is necessarily the principal contradiction whose existence and development determine or influence the existence and development of the other contradictions."

In the course of any surgery, there are many contradictions. As far as anesthesia is concerned, there are questions as to the safety of the patient, the question of analgesia, the question of impact on normal physiological functions (breathing, pulsation and blood pressure), the question of complicating diseases and rehabilitation of functions after an operation, etc. These contradictions are inter-connected during surgery and are in the same unified body. But the basic purpose of any method of anesthesia is to solve the question of pain caused by surgery. Because "the nature of a thing is mainly determined by the principal aspect of the contradiction, the aspect which has gained predominance," during surgery, the contradiction which has gained predominance is the contradiction between algesia and analgesia, and the two contradictory aspects depend upon each other, struggle against each other and transform themselves into each other according to certain conditions. In order to carry out surgery smoothly, it is necessary to all times to accord the leading role to analgesia so that pain is incessantly transformed into the aspect of analgesia (or the lightest sensation of pain).

When acupunctural anesthesia is administered, it is always necessary to make analgesia occupy the leading position of the contradiction. Generally speaking, there must be a number of basic conditions, namely, the effective application of acupuncture, the sure, precise, light and quick strokes of the operator, and the good mental condition of the patient.

Among these few factors, the effective application of acupuncture is a condition of primary importance for the success of surgery with acupunctural anesthesia. A good deal of practice shows that the effective application of acupuncture is determined by the amount of stimulation, and the amount of stimulation is directly proportional to the analgesic effect within certain limits, but this does not say that the amount of stimulation can be increased without limits. Too strong a stimulation exceeding the given limits can bring about the transformation of analgesia in the opposite direction and lead to the weakening of the analgesic effect. The most suitable amount of stimulation is generally gauged with the maximum amount of stimulation which the patient can stand and which gives the best result. The amount of stimulation is also closely related with the physical constitution of the patient, the nature of the stimulant, the region stimulated, and the extent, tactic, intensity, frequency and duration of stimulation.

At present, in acupunctural anesthesia of the ear with the needle or electric current as the stimulant, the manipulation of the needle manually or electrically can produce a sore, distended, heavy and numb feeling and make analgesia effective. However, the requirements of the two kinds of stimulant are at variance. The manipulation of the needle manually stimulates a small area and often relies on the insertion of the needle at an angle, the piercing of the spot and the enlargement of the range of stimulation to bring about the

proper amount of stimulation. When stimulation is effected with needles manipulated electrically, the proper electric current is used to control the amount of stimulation according to what the patient can withstand and the steps taken in the operation. This involves the action of stimulation by means of electric current and the needle. The action of any kind of stimulant must be governed by a given induction time and intensity of stimulation, so that it can arouse the corresponding region of the cerebral cortex to make a leap from excitation to inhibition, thus producing the proper stimulating and analgesic effects.

Chairman Mao teaches: "It is people, not things, that constitute the decisive factor." Practice tells us that in order to insure the success of surgery with acupunctural anesthesia, it is imperative to adhere firmly to the principle of politics in command so that the acupunctural anestheist, the surgeon and the patient support each other and work in close coordination. The acupunctural anesthetist and the surgeon must show profound proletarian feelings for the patient, devote every thought to him, study Chairman Mao's works together with him, help him improve his knowledge of acupunctural anesthesia and increase his confidence in overcoming his ailment, and make him change from simply the object of the operation into an active collaborator in the operation. The surgeon must perform an operation with sure, precise, light and quick strokes and do his utmost to reduce the injury inflicted on the tissues. The acupunctural anesthetist must strive to stabilize the effective application of acupuncture and to avoid adding difficulties to the operation due to the inability to meet the requirements in the effective application of acupuncture.

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"The growth of anything to maturity is full of difficulties and setbacks." We must oppose the idealist transcendentalism and national nihilism that holds acupunctural anesthesia to be "unscientific" and "useless" and not attempt to negate the effect of acupunctural anesthesia. We also must guard against the idea that acupunctural anesthesia is at the peak of its development. We must take Chairman Mao's brilliant philosophical thought as the weapon, combine the revolutionary spirit with the scientific attitude, and through clinical practice and scientific experiment, "go on discovering, inventing, creating and advancing" on the basis of seriously summing up experience; we must further clarify the principles of acupunctural anesthesia and give proper guidance to clinical practice.

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Why It Is Possible To Perform Pulmonary Resection with Anesthesia by a Single Needle

by

the Acupuncturual Anesthesia Unit of the Peking Tuberculosis Research Institute

(Peking Kuang-ming Jih-pao Dec. 29, 1971)

The great leader Chairman Mao teaches us: "Chinese medicine and pharmacology are a great treasure house, and efforts should be made to explore them and raise them to a higher level." In accordance with this teaching of Chairman Mao's, we have clinically applied acupunctural therapeutics from the treasure house of traditional Chinese medicine in surgery and obtained rather satisfactory results. Through repeated practice, we have gradually reduced the number of needles from 40 used in the beginning to only one for the successful performance of various types of pulmonary resection. This is a victory for Chairman Mao's proletarian line in medical and health work and in scientific research.

The Origin of the Use a Single Needle To Administer Anesthesia

When we first administered acupunctural anesthesia, we always thought that the more spots we pierced, the better the analgesic effect would be. We therefore picked two or three spots along each of the twelve meridians. For example, when performing pulmonary resection, it was necessary to insert forty needles into the four limbs of the patient, and four medical workers were required to stand by the side of the patient to manipulate the needles at the same time. But clinical experience taught us that inserting more needles did not necessarily yield better results. This posed a question then, of selecting effective spots and reducing the number of needles.

We seriously studied Chairman Mao's "On Practice" and "On Contradiction." Chairman Mao taught: "If in any process there are a number of contradictions, one of them must be the principal contradiction playing the leading and decisive role, while the rest occupy a secondary and subordinate position." According to Chairman Mao's teaching, we first stopped inserting needles into those spots which were not used frequently and were liable to produce side effects. Next we went further to conceive the bold idea of inserting needles only into the spots of the side operated upon when pulmonary resection was carried out on one side of the thoracic cavity. Practice is the sole criterion for testing truth. We inserted needles into our own bodies to test the sensation of pain and strove to find spots that produced an outstanding analgesic effect. Practice showed that putting needles into spots on one side could obtain results similar to putting needles into spots on both sides, and we successfully selected sixteen spots on the upper and lower limbs on the affected side of the patient's body for administering acupunctural anesthesia for pulmonary resection. Subsequently, the number of spots was further reduced to 12. The effect of acupunctural anesthesia was thus improved further and the scope of surgery was also enlarged from pulmonary lobectomy and the resection of a section of the lung to reshaping the thoracic cavity, the removal of thoracic membrane, and even surgery for

certain serious cases. At the time, some comrades felt we had "reached the ceiling," and for more than four years, we wormed our way into the "safe" of twleve needles and almost made no further progress at all.

In 1969, the Workers and PLA's Mao Tsetung Thought Propaganda Team organized us to study Chairman Mao's teaching that "ideas of stagnation, pessimism, inertia and complacency are all wrong." All seriously discussed things in the light of realities and unanimously declared: "We must practice again and again, be brave in creating new things and go on advancing." On the basis of raising understanding, we reduced the number of needles for pulmonary resection from twelve to two. Through making another deep-going study of "On Practice" and "On Contradiction," we were of the opinion that of these two spots, there surely must be one of primary importance that played the leading and decisive role. If this spot could be found, one needle could play the role of the two needles.

We perceived that by putting into application the experience of the PLA medical workers in piercing to a great depth through spots and piercing deep through the san-yang-lo (三陽絡) spot to the hsi-men (郄門) spot, it was possible to bring into play the analgesic function as well as the sedative function (which could control the oscillation of the vertical diaphragm), thus effecting pulmonary resection by a single needle. But it was recorded in the ancient medical books that the insertion of a needle into the san-yang-lo spot was prohibited. We thought that since Comrade Chao P'u-yü, who dedicated his life to the people under the guidance of Mao Tsetung thought, had pierced deep into the ya-men (哑门) spot, thus throwing open the "prohibited zone" of the deaf-mute, why couldn't we pierce deep into the san-yang-lo spot so as to throw open the "prohibited zone" of the thoracic cavity? Holding deep proletarian feelings, our comrades once again started experimental activities, finally grasped the proper amount of stimulation, and inserted a needle into the san-yang-lo spot to administer anesthesia for cutting open the thoracic cavity. For more than a year, we have performed thoracotomy and pulmonary resection for more than 100 patients through administering anesthesia by a single needle, and have been successful in all cases.

Why Is It Possible To Do Pulmonary Resection by a Single Needle?

Acupunctural anesthesia has been developed on the basis of the acupuncture-moxibustion therapy in traditional Chinese medicine. It produces anesthetic effect by inserting needles into certain spots. In order to understand from the principles of acupunctural anesthesia why it is possible to do pulmonary resection with anesthesia by a single needle, we must first discuss those physiological functions that can be aroused by inserting needles into spots.

The action of acupuncture in regulating the physiological functions of the human body has long been attested by clinical practice. For example, acupuncture can treat high blood pressure and low blood pressure as well as suppress pain. In acupunctural anesthesia, the regulatory action of

acupuncture is mainly expressed by the suppression of pain and the preservation of the normal functions of the visceral activities of the human body (for example, the preservation of the relative stability of breathing, blood pressure and pulsation). The practice of pulmonary resection with a single needle inserted into a single spot has enabled us to understand that the ability of acupuncture to suppress pain is the result of the regulatory action of the pierced spots in the organism.

Traditional Chinese medicine holds that the meridians distributed all over the body constitute the pathways through which the vital energy, blood and nourishment for sustenance are conveyed. They link together the internal organs, the four limbs, the bones, the muscles, the skin and other tissues and organs into a unified whole. Actually, what the ancient people described as the meridians conform to the structure and functions of the brain, the nerves and the blood vessels now known. Therefore, it is not possible to stand the meridian theory against modern physiology and anatomy.

We perceive from clinical practice that the insertion of needles into spots in the body of a normal person immediately produces a sore, distended, numb and heavy sensation called te-ch'i (得气)* and can raise the threshold of pain, but the insertion of needles into patients suffering from tuberculosis of the thoracic vertebra and into the lower limbs of patients suffering from paraplegia does not produce the sensation of te-ch'i, and the threshold of pain also does not rise. This is because the nerves of the lower limbs have lost their conductivity.

We also had measured the blood flow and the temperature at the extremities of the four limbs of patients undergoing pulmonary resection who had needles inserted into the upper and lower limbs on one side of the body. The results showed that the blood flowed faster and the temperature rose higher at the extremities of the limbs on the side inserted with needles compared with the opposite side. This phenomenon is in conformity with the clinical effect of acupunctural anesthesia.

When pulmonary resection is carried out for example, putting needles into spots in the limbs on the side for surgical operation yields better results than putting needles into spots on the opposite side, and the insertion of needles into spots in the upper limbs also yields better results compared with putting needles into spots in the lower limbs. It can be seen from this that what traditional Chinese medicine describes as the meridians have functions that are in conformity with those of the nerves and blood vessels in modern medicine.

The regulatory action produced by putting needles into effective spots is led to the cerebrum through the meridians. Modern medicine confirms that the cerebrum is the highest part of the nervous system of the human body as well as the general headquarters within the human body. This is fully understood in the same way in traditional Chinese medicine.

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* See explanatory note on page 12. - CB Ed.

for example, it is pointed out in Nei Ching (內經) that "the mind is the master of faculties" (that is, the mental consciousness and the activity of the mind) and that "all arteries and veins pass through the brain." All this emphasizes the important role of the cerebrum within the human body.

The cerebrum regulates the physiological activities of the human body to a high degree of perfection. The sensation produced by inserting needles into spots and the pain caused by surgery are necessarily conducted to the cerebrum to stimulate action. In the process of biological evolution, the cerebrums of higher animals and human beings have extraordinarily sensitive power of judgment and sense of selection for different kinds of external stimulation. The cerebrum accepts with priority the stimulation beneficial to the human body, but tries its utmost to reject the stimulation harmful to the human body. The sensation of te-ch'i produced by inserting needles into spots is a beneficial stimulation. Therefore, acupuncture is able to stop pain (through the treatment of diseases) as well as to prevent pain (through performing surgery with acupunctural anesthesia). The beneficial function of stimulation produced by inserting needles into spots is conducted to the cerebrum through the meridians, and is accepted with priority by the cerebrum to form the predominant excitatory substance. This predominant excitatory substance is then diffused to other regions of the cerebral cortex and the regions under the cortex. Through the law governing the negative induction of the activity of the nerves (the excitatory process of a center leads to the inhibition of other centers, and this is physiologically described as negative induction), the powerful inhibition formed in the cortical center of pain or the center under the cortex takes the initiative to depress and exclude the pain stimulated by surgery, thus preventing the formation of or torpifying the sensation of pain. The regulatory action of acupuncture on the viscera is also effected through the cerebrum at the same time. The effect produced by inserting a needle at an effective spot in depressing pain and regulating the activity of the viscera is sufficient to inhibit or exclude for as long as several hours the strong pain and physiological disorder caused by an incision up to a foot long. This is why pulmonary resection can be carried out under anesthesia by a single needle.

At present, one needle at an effective spot is more effective than needles at forty spots as at the beginning. This is the outcome of repeated clinical practice in the past few years. With the number of needles inserted reduced, the effect of acupunctural anesthesia is continuously raised. But not every spot is so effective. Even the results of the two kinds of prescribed spots which we presently use frequently are also not the same. Some produce a more pronounced effect in preventing difficult breathing after a thorocotomy, and some are more effective for depressing pain. This shows that the spots have their relative peculiarities, and even a given spot has a particular role to play toward certain visceral organs and regions. Besides, the effective spot must be given a proper amount of stimulation before the regulatory functions of the organisms can be strengthened and a good clinical effect obtained. Therefore, we know that the most important factors which determine the effect of acupunctural anesthesia should be the selective use of effective spots and the proper amount of stimulation. We discover clinically that the san-yang-lo spot (also the yi-feng 翳風 spot) is

more sensitive, and when a needle is inserted into this spot and the proper amount of stimulation is given, the regulatory functions of organisms are aroused, the stimulation caused by the surgical incision is overcome and the smooth accomplishment of a chest operation is assured.

Described above is the material base of acupunctural anesthesia for surgery, that is, the physiological functions of inserting needles into spots. To improve the effect of acupunctural anesthesia, arousing the enthusiasm of the patient also cannot be neglected. This is because an operation under acupunctural anesthesia is carried out with the patient in a fully conscious state. The patient is at all times mentally active throughout the operation. Clinical practice shows that the sensation of pain is conditioned by the human mind. Although the effect of acupunctural anesthesia is independent of the subjective will of man and functions through the physiological organisms of the patient, the mental state of the patient clearly affects his physiological functions and his ability to resist the surgical incision. When the patient is in a negative mental state, anxiety, tension and fear all can weaken the analgesic effect of acupuncture. When the patient has a firm determination and conviction for overcoming the disease and is optimistic in thinking and emotionally calm, he can take the initiative in collaborating with the medical workers, reduce his susceptibility to the incision, and hence raise the effect of acupuncture in depressing pain and regulating the visceral activity.

For example, when pulmonary resection was carried out in the past, to solve the question of respiratory obstruction after the chest was cut open, we only thought in terms of technical measures by administering pneumothorax and using the oxygen tent in the operation, but had not entirely solved the question. Later, we carried out ideological work for the patient. The patient performed deep breathing exercises before an operation, was emotionally calm during the operation, and performed deep breathing slowly in close coordination after the chest was cut open. The question of respiratory obstruction was more properly solved.

Meanwhile, the medical workers seriously conducted ideological and political work for the patients, thus dispelling their ideological misgivings and strained feelings about surgery. To determine effective spots, the medical workers tested and retested their own bodies. In particular, their adopting "an extraordinarily warm attitude toward comrades and the people" and their performing surgery with sure, precise, light and quick strokes were also important to the success of acupunctural anesthesia. Therefore, only the full mobilization of the "two initiatives" of both patients and medical workers can insure the success of acupunctural anesthesia. To be sure, emphasis on giving play to the "two initiatives" doesn't mean to say that the effect of acupunctural anesthesia is unimportant. In order to give play to the "two initiatives," inserting needles into spots and the effect of acupunctural anesthesia must be unified and promote each other. Furthermore, the subjective initiative of a patient is dependent upon the material base of the process of the internal regulation of organisms set off by inserting needles into spots.

To sum up, our preliminary view on the theory and principles of acupunctural anesthesia is that under acupuncture, the regulatory functions of the human body constitute the basis of acupunctural anesthesia, that the effective spots and the proper amount of stimulation are essential conditions for bringing the regulatory functions of the human body into full play, that the meridians are passages for conveying the effect of acupuncture, that the cerebrum is the leading factor in the regulatory functions of the human body, and that the bringing of the "two initiatives" into full play insures the success of acupunctural anesthesia.

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Acupunctural anesthesia has revealed its unlimited vitality and enormous superiority. Pulmonary resection with anesthesia by a single needle is not the "peak." At present, such a new-born thing as acupunctural anesthesia still has some imperfections that we need to solve gradually in the course of practice.

Chairman Mao teaches us: "In the fields of the struggle for production and scientific experiment, mankind makes constant progress and nature undergoes constant change; they never remain at the same level." We certainly must go on trying to make acupunctural anesthesia radiate greater brilliance and render more contributions to the creation of China's new pharmacology.

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Why Inserting Needles into Spots Can Raise the Threshold of Pain

by

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(Peking Kuang-ming Jih-pao Dec. 29, 1971)

Since we started clinical practice and research work in acupunctural anesthesia in 1965, we have obtained good results in surgery ranging from the block resection of the stomach to thoracic and gynecological operations and operations on the five sensory organs. Why is it that the use of one or several small silver needles to stimulate the spots can raise the threshold of pain for surgery? In light of our practice and knowledge, we hereby set out some preliminary views.

The Contradiction between Suppression of Pain with Acupuncture and Pain Caused by Surgery Functions in the Brain

In the practice of acupunctural anesthesia, the more pronounced the sore, distended, heavy and numb sensation produced by the stimulation of spots with needles manipulated manually or electrically--that is, the sensation of te-ch'i (得气)*--is, the more the threshold of pain in the region operated on is raised and the more satisfactory is the analgesic effect. The sensation of te-ch'i and its continuance are important conditions for success in acupunctural anesthesia.

Practice shows that te-ch'i is the reflection of the stimulation by acupuncture in the human brain and is inseparable from the functions of the nervous system. Sensation-oriented physiology tells us that sensation is external stimulation conducted through the nerves of sensory organs and reflected in the cerebrum. The sensation of te-ch'i through acupuncture is likewise also based on this principle. How is the analgesic action of acupuncture effected in the brain? We assume that the stimulation of acupuncture or the electric current received by the sensory organs is conducted to the brain through the peripheral nerves and causes changes in the corresponding nerve cell group of the cortical center or the center under the cortex. When such stimulation is continuously conducted to the brain, because of the physiological characteristics of the nerve center, this corresponding nerve cell group forms the dominant point of excitation and the nerve cell groups of the center in the perphery and vicinity of this point of excitation are in a depressed or less excited state. The stimulation from surgery conducted to the brain through the nerves should have registered in the corresponding region of the brain, thus giving rise to the reflection of pain. However, because of the action of the dominant point of excitation formed by the stimulation of acupuncture, the nerve cell groups which

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* See explanatory note on page 12. - CB Ed.

reflect the stimulation received by the region of the operation in the brain have been in a depressed or less excitatory state. With the reflection of pain thus inhibited and the threshold of pain also raised, the patient does not feel the pain--or what is unbearable pain under normal conditions becomes bearable. This is a preliminary postulation of the analgesic principle of acupunctural anesthesia. What then constitutes the material base of excitation and inhibition? Experimentally, the change in electric potential differential has provided some evidence, but further study has yet to be carried out.

The suppression of pain through acupuncture and pain aroused by the stimulation of a surgical incision form a pair of contradictions that thread through the course of the operation from beginning to end. Only when this aspect of suppression of pain through acupuncture becomes and remains the principal aspect can satisfactory analgesic effect be derived. The ability of acupuncture to form a dominant point of excitation in the brain is an important basis for its becoming the principal aspect of the contradiction and in gaining the dominant position. But such dominance is relative, and it is not possible to say that once it is established, no matter how great the stimulation of surgery is, the patient will not have pain reflected in the brain. The struggle is absolute. The concept concerning the amount of stimulation helps us to understand the analgesic effect of acupuncture from the angle of the strength of the two aspects of the contradiction. The amount of stimulation is related to the intensity and time of stimulation. With time a factor, the intensity of some stimulation in surgery has to be stronger or much stronger, but seen from the aggregate amount of accumulation, the aspect of acupuncture can be stronger. Combined with the functions of the dominant point of excitation, the analgesic aspect of acupuncture can be made to play the leading role throughout and can also occupy the dominant position.

"But this situation is not static; the principal and the non-principal aspects of a contradiction transform themselves into each other and the nature of the thing change accordingly." During surgery with acupunctural anesthesia, we constantly noticed that when the regions rich in nerve endings such as the skin of certain regions and the peritoneum were incised, or when the roots of nerves and blood vessels at the hilus of the lungs or the lesser curvature of the stomach were drawn, the patients often complained of pain. This was because the intensity of the stimulation of surgery was very great, and even though the time involved was very short, the amount of stimulation was still quite great, and with the stimulation accumulated in the original operation added, the action of acupuncture was outstripped. The short duration of pain was thus transformed into the principal aspect of the contradiction, and pain was felt by the patient. Therefore, the operating surgeon should cut short as far as possible the time of operation on these regions or reduce the visceral traction.

For the purpose of increasing the strength of the acupunctural aspect that constitutes the leading factor and of reducing the surgical pain, and in order to obtain the anticipated results in acupunctural anesthesia, the selection of the best points of stimulation (spots) and the

adoption of the proper intensity of stimulation, time of induction and method of stimulation (manual or electrical stimulation) are very important.

The mental state of the patient is also an important factor affecting the success of acupunctural anesthesia. Because of the struggle of this pair of contradictions--analgesia through acupuncture and pain caused by surgery--is carried out in the cerebrum, it can be assumed that the ideological activity within the cerebrum necessarily will affect both aspects of the contradiction. When the patient is in a positive mental state and has faith in the analgesic effect of acupuncture, it is easy to obtain better results. Otherwise, the results are often unsatisfactory.

The Functions of Meridians in Acupunctural Anesthesia

Based on our present understanding, the phenomena of the meridian and the functions of the nervous system are closely related. The sore, distended, heavy and numb feeling produced by acupuncture is not conducted in every case through the nerve trunks, and the use of nerves to explain things appears to be improper. However, we are of the opinion that the sensation engendered after acupuncture and the phenomenon of the direction it takes on the body surface must be determined by the integrity of the functions of the nervous system--which includes the centers, the peripheral nerves and their endings as well as the whole vegetative nervous system--and cannot be explained merely according to the anatomical physiology of the nerve trunks. This is because the sensation can only be reflected in the brain and the stimulation of acupuncture has to be conducted through the nerves to the brain.

When needles are inserted into some patients suffering from general paralysis or into the lower limbs of patients suffering from paraplegia, the patients have no sensation at all. Even in the case of spots that easily give rise to the sensation of te-ch'i, once these regions are under local anesthesia, the sensation of te-ch'i will not appear. This shows that the phenomena of the "meridians" cannot exist independently when cut off from the nervous system. And since the phenomena of the "meridians" also cannot be explained with the anatomical physiology of the nerve trunks, this demonstrates precisely that the nerve trunks cannot represent the whole nervous system.

We understand the question of the effect of chiasmal selection of spots in this way. Traditional Chinese medicine had long ago adovcated the "treatment of an ailment in the left side from the right side, and of an ailment on the right side from the left side" both in practice and in theory. Such effective response is in objective existence. However, if the spots are blocked in advance by means of local anesthesia of if spots in a patient suffering from general paralysis or in the upper limb of the paralyzed side of the patient are used, the anticipated results cannot obtained in the chiasmal selection of spots. All of this shows that the phenomena of the "meridians" cannot exist independently when cut off from the nervous system. We cannot confine ourselves to the viewpoint based on the physiological anatomy of local nerve trunks when looking at the phenomena of chiasmal selection of spots, but should consider the nervous system as a whole. Chiasmal selection of spots produce effective response also through the

functions of the nerve centers. As to how the nerve centers bring their functions into play, this has to be studied further.

What then are the relations between the nervous system and the meridians? This must be understood from what aspects are embraced by the meridians as preached by traditional Chinese medicine. Our understanding is that what traditional Chinese medicine calls the meridians stand for a system summed up from the aspects of their functions. They mainly refer to the phenomena of functions and are not an independent anatomical system. Here are some descriptions of the meridians made in ancient times. The Ling-shu (灵枢) and Ching-mo-p'ien (经脉篇) say: "The trunk meridians can decide life or death, handle all diseases and conciliate what is abstract with what is concrete, and must be kept open." The Pen-tsang-p'ien (本藏篇) says: "The trunks meridians are means for circulating vital energy and blood, conciliating the positive with the negative, nourishing the sinews and bones and benefiting the joints." The Hai-lun-p'ien (海论篇) says: "The twelve trunk meridians are affiliated with the viscera, while the external branch meridians are affiliated with the limbs."

Let us explain the functions of the meridians in modern language: First, they are distributed in all parts of the body, and link up the viscera, the head, the trunk and the different parts of the human body into a whole. Second, the meridians are pathways through which vital energy and blood are circulated in the human body; they insure the incessant circulation of vital energy and blood in the human body, bring nourishment to the organs and tissues, and thus bring their functions into play. Third, they keep the balance of organisms and preserve the harmony of the functions of different organs, otherwise, "all kinds of ailments will occur due to the abnormal functioning of the meridians and the disharmony of vital energy and blood." Therefore, the meridians mainly refer to functions. The range of their functions still cannot be explained with a single anatomical system and its physiological functions, because they involve a number of anatomical systems and their functions, such as the nervous system, the circulation system, the endocrine glands, etc. Among them, the functions of the nervous system are still most important. The meridians cannot wholly embrace the functions of any independent anatomical system, first of all the whole of the nervous system. According to what traditional Chinese medicine says, certain activities of the higher centers of the nervous system--for example, the mental aspect--are not included in the functions of the meridians, but are affiliated with the category of viscera. However, as far as the analgesic aspect is concerned, we think it can be explained by modern medicine with the functions of the nervous system and by traditional Chinese medicine with the theory of meridians, since one discusses the essence, while the other the phenomena. The phenomena and functions of the meridians discussed here actually refer to the functions of the nervous system, and modern medicine is also not entirely clear as to the functions of the nervous system at present. We believe that the study of the principles of acupunctural anesthesia will further clarify this question and at the same time also greatly boost the study of the functions of the nervous system.

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The Essence of Meridians and the Material Base of Reaction to Te-ch'i*

by

the Acupunctural Anesthesia Unit of Peking Friendship Hospital

(Peking Kuang-ming Jih-pao Jan. 31, 1972)

The successful performance of a large number of operations with acupunctural anesthesia has spurred people to make an in-depth study of the theory and principles of acupunctural anesthesia. In order to clarify this question, it is essential to thoroughly explore and discuss the theoretical system of traditional Chinese medicine concerning the essence of the theory of meridians. We set out here some crude and shallow views on only two aspects of the question--the essence of meridians and the material base of reaction to te-ch'i and we wish to study the matter together with other comrades.

Concerning the Essence of Meridians

Chairman Mao teaches: "When we look at a thing, we must examine its essence and treat its appearance merely as an usher at the threshold, and once we cross the threshold, we must grasp the essence of the thing; this is the only reliable and scientific method of analysis."

Traditional Chinese medicine abounds in works concerning the theory of meridians. The earliest ones were Nei-ching (内 经) and Nan-ching (难 经) that covered the widest range of subjects. Although the representative works of the science of acupuncture of various periods ranging from Chia-i-ching (甲乙经), Chin-lan-hsun-ching (金兰循经) and Shih-szu-ching Fa-hui (十四经发挥) to Chen-chiu Ta-ch'eng (针灸大成) gave free scope to and developed to varying degrees the theory of meridians, yet the majority of their theories and arguments concerning the physiological, pathological and anatomical aspects of the meridians originated from Nei-ching and Nan-ching. Nei-ching and Nan-ching summed up the clinical practices of many medical practitioners in the periods of the Spring and Autumn Annals and the Warring States (more than 2,000 years ago) and upgraded them to medical theories. They represented the level of medical theory and skill of healing at that time. In these two classical writings of traditional Chinese medicine, the physiological, pathological and anatomical knowledge of the meridians came on the one hand from the accumulation of abundant experience in the clinical practice of acupuncture and moxibustion, and at the same time also from the reasoning and analysis of clinical phenomena made by medical practitioners at that time. This was mainly derived from the routes through which the sensation of acupuncture was conducted as well as the results obtained from the insertion of needles into certain spots for the treatment of certain diseases.

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* See explanatory note on page 12. - CB Ed.

On the other hand, we notice from many chapters of these two works that there had really been practical knowledge of anatomy at the time. For example, Ling-shu's "Ching-shui-p'ien" (灵枢·经水篇) clearly sets forth: "There is here a man eight feet tall whose skin and muscles can be used for making external measurements. On his death, he can be dissected for observation. The compactness and size of his viscera, the number of ducts (? 谷), the length of arteries and veins...can, by and large, be measured." At the same time, we also can see from the chapters dealing with the viscera, the meridians, the bones, and the blood vessels in Ling-shu that the size, weight and capacity of the visceral organs, the five sense organs of the body surface and the length of the bones and meridians had actually been measured at the time, and the majority of such measurements recorded are roughly in conformity with modern anatomical knowledge. Therefore, it can be seen from these records in Ling-shu that the medical practitioners of that time had done a practical anatomical study of the corpse. The anatomical records of "meridians" in Ling-shu have given us a hint of the following concepts:

(1) The meridian structure comprises the "twelve ching-mo" (十二经脉, or trunk meridian ducts), the "twelve ching-pieh" (十二经别), the "twelve ching-chin" (十二经筋, or trunk meridian tendons), as well as the "ch'i-ching pa-mo" (奇经八脉, eight peculiar trunk meridian ducts), the "fifteen lo-mo" (十五络脉, or branch meridian ducts) and numerous "lo-mo" (branch meridian ducts) and "sun-lo" (孙络, or meridian networks).

(2) The relations between ching (经) and lo (络) are: the ching ducts are the larger, thick trunk ducts, the lo ducts are the smaller branch ducts, and the sun-lo is a meridian structure that spreads like a "net" over the shallow surface regions and the viscera.

(3) The "ching-mo" (trunk meridian ducts) and the "ching-chin" (trunk meridian tendons) run parallel in most cases "among the muscles" in the limbs.

(4) The meridians are passages through which the vital energy and blood circulate, and their law of movement among the organisms is "motion in a cycle" "like a ring without ends." At the same time, the points of argument that "the blood circulates through the ducts," "the vital energy circulates outside the ducts," and "the vital energy is in command of the blood" have also been advanced.

(5) The length of the "ducts" can be measured with the "bones" and is closely related to the size of the body skeleton.

(6) The "twelve trunk meridian ducts" are separately linked and related anatomically with the various visceral organs. The "twelve trunk meridian tendons" have no such links and relationships.

(7) What is particularly worthy of mention is that the Nei-ching clearly points out that the meridians are most closely related with the cerebrum. For example, "the tu duct (督脉) starts from lower extremity... runs through the spine, and enters the brain."

(8) The Nei-ching mentions in a number of places that the meridians are directly linked with the heart--for example, "through the trunk meridians into the heart," "the meridians run upward to the heart and branch out around the cardiac system," "starting from the chest, they are affiliated with the heart and form a network at the lower diaphragm," "the shou-shao-yin (手 少 陰) duct of the heart starts from the heart and is affiliated with the cardiac system"....

(9) In some places, the meridians clearly refer to the arteries--for example, "the pulmonary duct runs through the ching-ch'ü (經 渠 or trunk meridian channel). The ching-ch'ü leads to the ts'un-k'ou (寸 口 or pulse at the wrist); it is in motion and not at rest." It is also pointed out that the abstract or concrete state of a person can be known through "feeling the pulse" at the jen-ying (人 迎), ts'un-k'ou (寸 口), fu-yang (趺 陽) regions. What are referred to here as the ching-ch'ü, ts'un-k'ou, jen-ying regions which are "in motion and not at rest" are precisely the radial artery, the cervical artery, and the dorsal pedis artery in the superficial regions of the human body. The medical practitioners of ancient times "felt the pulse" at these regions to determine the abstract or concrete state of the body, and this method of "feeling the pulse" is still in use today. The Nan-ching (難 經) clearly points out that "all the twelve trunk meridians have arteries."

(10) Some refer to the veins which can be seen on the body surface--for example, "the one that is commonly seen is the tsu-t'ai-yin (足 太 陰) which passes over the external ankle (should be the internal ankle) and is not concealed." This refers precisely to the saphenous vein of the internal ankle.

At the time of writing the Nei-ching to sum up the medical knowledge of their age, the anatomical, physiological and pathologic physiological descriptions of the meridians by the ancient medical practitioners were based partly on their practical knowledge obtained through clinical practice and anatomical practice, and partly on their reasoning according to the clinical phenomena. For the purpose of explaining these clinical phenomena, the medical practitioners of the time raised them to the theoretical plane, and thus gave birth to the theory of meridians. Because the reaction to acupuncture is a complicated and comprehensive reaction of the organisms, due to the limitations of the level of knowledge of other branches of learning at the time, they were unable to distinguish with precision the functions of the various systems as clearly as modern medicine when they explained theoretically this series of complicated phenomena. As a result, they broadly described the nervous system, the arteries and veins in the blood circulation system, and certain functions of the endocrine and lymph systems as the "meridians."

Under the historical conditions of the time, the medical practitioners of the Nei-ching age had made relatively careful observation and study of the physiological structure and functions of the human body. However, due to the limitations of the scientific level of that age, generalization, imperfection and even errors were unavoidable.

Chairman Mao teaches us: "Study our historical legacy and critically sum up things with the Marxist method." As we study the essence of the meridians today, we must make all-round analysis with the historical materialist and dialectical materialist viewpoints before we can draw relatively correct conclusions.

What Is the Material Base of Reaction to "Te-ch'i"?

Whether or not acupuncture gives rise to the sensation of te-ch'i has a most important bearing on the effect of acupunctural anesthesia. Below, te-ch'i in acupunctural anesthesia and the treatment of diseases with acupuncture are set in contrast with the results of surgical and laboratory experiments on animals for determining the functions of the nerves and muscles to show that the reaction to te-ch'i is mainly effected through the nervous system and that the nerves constitute the material base of reaction to te-ch'i.

Seen from the sensation of te-ch'i in acupuncture, te-ch'i mainly conveys a sore, numb, heavy and distended feeling and the sensation of the radioactivity of "electric shock." This kind of sensation is similar to the feeling of oppression by the nerve branches and trunks due to the prolonged bending of the limbs (for example, prolonged squatting or bending of the arm) or the sensation caused by an unintentional hit at the ulnar nerve at the back of the elbow. We know that the sensation aroused by a tactic in massage when the ulnar nerve at the back of the elbow is agitated is also entirely similar to the sensation of "electric shock" conducted to the inner part of the arm when a needle is inserted into the "hsiao-hai" (小海) spot. The treatment of hemiplegia of the limbs--an after-effect of infantile paralysis--and of the atrophy of the limbs due to infantile paralysis (by agitating the tibial nerve and the common peroneal nerve at the back of the knee joint) with this massage tactic and treatment with acupuncture produce similar results. There is a similar strong reaction to te-ch'i when a needle is inserted into a nerve plexus according to the distribution of the nerve trunks.

Seen from other symptoms of te-ch'i in acupuncture, after acupuncture gives rise to the sensation of te-ch'i at many spots with stronger reaction in the body (for example, the huan-t'iao (环跳), feng-shih (风市), Yang-ling-ch'uan (阳陵泉), tsu-san-li (足三里), t'ai-ch'ung (太冲) and ho-ku (合谷) spots), an evident throbbing of the muscle groups in the vicinity of the spots and of the muscle tendons in the fingers and toes can often be seen by the naked eyes. The throbbing is especially evident when the needles are manipulated electrically. In the case of some spots, although there is no evident throbbing after te-ch'i, yet if a hand is placed in the vicinity of the punctured region, the throbbing of the muscle can be sensed. Some experienced practitioners of acupuncture and moxibustion often depend on this and what they sense under the needle to tell whether there is a sensation of te-ch'i and the magnitude of te-ch'i. In books about acupuncture and moxibustion of ancient times, this sensation had been listed as a demonstration of te-ch'i. Such throbbing of the muscles is entirely identical with the throbbing of muscles caused by

accidentally touching the branch nerves that have not been anesthetized in a surgical operation for amputation. When the extremities of the limbs under local anesthesia or the spots in the lower limbs of a patient given lumbar anesthesia are stimulated with acupuncture, there is neither such reaction as the throbbing of muscles, nor the sensation of te-ch'i.

When a needle is inserted into a capillary vessel, there is no sensation of te-ch'i but only an evident sensation of pain. An experienced practitioner of acupuncture and moxibustion knows that his needle has pricked a blood vessel when a patient complains of pain after the insertion of the needle (what the practitioners of acupuncture sense under their needles are at variance). From this, it is evident that what te-ch'i in acupuncture refers to as "meridians" are not the blood vessels. The "Kuan-chen-p'ien" (官针篇) in Ling-shu (灵枢) states: "Needles are inserted deep and kept for a long time in the ducts that are deep and invisible in the body so as to get at the vital energy. Don't pierce the superficial ducts. Ducts ought to be blocked by pressure before they are pierced to insure that there is no exudation of essence (referring to bleeding) but only the exudation of the evil energy." This also shows that the treatment of diseases with acupuncture in the Nei-ching age generally did not refer to the insertion of needles into blood vessels.

As regards the principles of blood-letting therapy through piercing the vascular network, two are mainly known to us at present: one is of a physical nature, for example, the lowering of pressure; the other and the more important one is the reflex action brought through the receptors within the blood vessels. It can be seen from this that the nervous system and the blood circulation system are very closely related, and the ancient people can hardly be blamed for confusing them. The conduction regions of the "fourteen regular trunk meridian spots" for acupuncture are in conformity with some but are at variance with other circulation regions of the "fourteen trunk meridians." According to our observation made clinically on a number of occasions, the conduction pathways of the "fourteen trunk meridian" spots are not entirely identical to the routes of circulation as described in the ancient books on acupuncture and moxibustion. The insertion of a needle into any region other than the "regular trunk meridians" in the body (with attention paid to the specified depth and direction and at the same time to avoiding the important organs and bones) can produce reaction to te-ch'i, and the route of conduction is in most cases in correspondence with the distribution of nerves in the body. This is not in correspondence with the circulation of the "meridians" as recorded in the ancient documents (the circulation routes of the "meridians" recorded in the medical documents of various ages are also not entirely in agreement).

An analysis of the diseases that have been correctly diagnosed by modern medicine and effectively treated with acupuncture fully proves that acupuncture mainly works through regulating the functions of the nervous system. For example, acupuncture is clearly effective for the treatment of aphasia, obstructed body movement and various types of neurasthenia caused by damage to the motor and speech centers or obstructed functions of the

central nervous system due to inadequate supply of blood or extravasation of blood, certain diseases or ailments such as deaf-mutism, infantile paralysis, facial spasms, the excitatory type of tremor of the upper eyelid nerve endings, nervous spasm and certain types of neuropsychosis caused by the maladjustment of certain nervous functions.

The clinical symptoms of diseases or ailments that have been correctly diagnosed to be due to impaired nerves are most closely related with the nervous functions. For example, the oppression of the brachial plexus (for example, the congenital 7th cervical rib) or the impairment of the brachial plexus can lead to obstructed motion, muscle atrophy in the affected limbs, and evident signs of malnutrition and myasthenia of the skin. Local nervous impairment evidently affects the supply of blood in circulation and thus affects the development of muscles, skin and other tissues of that region. All this shows that the nervous functions also occupy a strong leading position in any location of the body.

When a needle is inserted into a scar formed after a surgical operation or left by an external wound, the reaction to te-ch'i is either very weak or fundamentally nil. This phenomenon also fully shows the relationship between reaction to te-ch'i and the nervous system. Because the scar is mainly made up of connective tissues and has no nerve endings, there cannot be any sensation of te-ch'i after the insertion of a needle.

As regards certain special connections between certain particular phenomena of the meridians and spots and the viscera and other regions, it is still not possible at present to explain them with the knowledge of the structure and physiology of the nerves now known to us. The existence of these phenomena will spur us to carry out deeper study.

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Activity of the Reticular Structure of the Brain Stem and Acupunctural Anesthesia

by

the Acupunctural Anesthesia Research Group of the Revolutionary Committee of the Kwangsi Medical College

(Peking Kuang-ming Jih-pao Jan. 31, 1972)

Since 1958, our college has had good results in performing more than 1,600 major and minor operations of various descriptions with acupunctural anesthesia. Why is it possible to operate with acupunctural anesthesia? How can the therapeutic effect of acupunctural anesthesia be raised further? In accordance with the great leader Chairman Mao's teaching that "man has constantly to sum up experience and go on discovering, inventing, creating and advancing," we have gained some enlightenment on these two questions by making certain observations and conducting laboratory experiments with animals. We feel that the region of the "brain stem" in the central nervous system can be an important link for obtaining results in acupunctural anesthesia, that the activity of the "reticular structure" within the brain stem can be an important condition for procuring an effect in acupunctural anesthesia, and that the adoption of proper methods to influence the functional activity of the "reticular structure of the brain stem" can be a new way to improve the therapeutic effect of acupunctural anesthesia.

Looking at the Principles of Acupunctural Anesthesia from the Characteristics of Anesthesia

The great leader Chairman Mao teaches us: "What constitutes the foundation of our knowledge of a thing is to observe what is particular to this form of motion of matter, namely to observe the qualitative difference between this form of motion and other forms." In compliance with Chairman Mao's teaching, we first made clinical observation and comparison of the characteristics of acupunctural anesthesia. We adopted different methods (for example, for the body, ear, nose, etc.) to perform major, intermediate and minor surgery on the head, the face, the neck, the chest, the abdomen, the perineum, the four limbs and other regions. Through practice, we notice that acupunctural anesthesia really has many characteristics. For example:

(1) The analgesic effect of acupunctural anesthesia is closely related with the way of thinking and mental state of the patient. When the patient is mentally calm, has full confidence in acupunctural anesthesia and is an active collaborator in the operation, the effect is often better. When he has a perturbed mind, is mentally strained and is afraid of the operation, the effect is poorer. But if the patient is put into an indistinct state of consciousness or to sleep, then the effect not only cannot be improved but also would be lowered.

(2) The effect of acupunctural anesthesia has its striking individual difference. Prescribing the same spots and the use of the same intensity of stimulation, the same length of induction time and the same type of operation

can produce different results for different patients. But there is invariably no evident difference in the analgesic effect of different methods of acupunctural anesthesia.

(3) Acupunctural anesthesia acts to regulate broadly the physiological functions of the human body. Under acupunctural anesthesia, it is possible not only to induce analgesia, but also to produce favorable regulatory action in transforming the various pathological and physiological functions such as blood pressure, pulsation, breathing and gastro-intestinal activity, and to stimulate the restoration of these functions to normal.

(4) The spots of different parts of the body frequently can result in the appearance of analgesic effect in the same region operated on, and the same spot can also produce analgesic effects in operations performed on different parts of the body.

Based on the above-mentioned characteristics of acupunctural anesthesia, it occurs to us that the "reticular structure" in the region of "brain stem" can have important relations with the action of acupunctural anesthesia. Modern research in physiology points out that the reticular structure of the brain stem has very broad and complicated functions and is very closely related to the regulation of the motion of the trunk, the regulation of various visceral activities, the regulation of various sensory functions, and the effect of the functional activities of the cerebral cortex. The various sensory signals of the whole body--the signals of the visual sense, sense of hearing, sense of pain, tactile sense, sense of smell and various visceral senses (for example, of the lungs, the stomach, the heart and the blood vessels)--can converge on the reticular structure of the brain stem and even can converge at the same single nerve cell in the reticular structure. The activity of the reticular structure of the brain stem also greatly influences the blood pressure, the pulse, breathing, the motion of the muscles and the sensory functions of the whole body. The reticular structure of the brain stem is also closely connected with the cerebral cortex. The preservation of the excitability of the cerebral cortex and even of the conscious state is dependent on the activity of the reticular structure of the brain stem. The stimulation of the reticular structure of the brain stem at any point can activate the whole of the cerebral cortex, but the impairment or inhibition of the functional activity of the reticular structure can lower the excitability of the cerebral cortex and bring about a lethargic state. Therefore, through observing the characteristics of acupunctural anesthesia and analyzing and comparing the physiological functions of the reticular structure of the brain stem, we are given the idea that the reticular structure of the brain stem can be an important link for obtaining results in acupunctural anesthesia. In view of this, we have conducted laboratory experiments with animals.

The Reticular Structure of the Brain Stem Is an Important Region for Implementing the Regulatory Effect of Acupuncture

Clinical practice shows that acupuncture has a very good regulatory effect. Under acupunctural anesthesia, the blood pressure, pulse and

breathing of the patient can generally be kept steady during an operation. High blood pressure can be lowered, and the blood pressure of the patient suffering from shock can also be made to rise again. The function of acupunctural anesthesia in regulating the blood pressure has also been confirmed by our laboratory experiments with animals. The stimulation of the nerves of an animal directly stimulated with a strong electric current can set off violent fluctuation in the blood pressure, and the reflex of the blood pressure can rise or drop. Acupunctural anesthesia really can strikingly weaken or cause such fluctuations to disappear. If the nerve trunks in control of the spots are severed, or if the link of the spinal cord with the brain is cut between the spinal cord and the base of the brain, such regulatory action of acupunctural anesthesia on the blood pressure disappears accordingly. This shows that the regulatory action of acupuncture is implemented within the brain above the spinal cord. Because the cutting of the relevant nerves or of the spinal cord undermines the route of conduction, the effect of acupuncture is not conducted to the brain and thus is lost. What is worthy of note is that if we merely remove the cerebrum without injuring the nerves and the spinal cord so that the effect of acupuncture can only be conducted upward to the brain stem region of the central nervous system but cannot rise further to the cerebrum, then the regulatory action of acupuncture on the blood pressure can still manifest itself. This shows that the brain stem region of the central nervous system really plays a most important part in implementing the regulatory action of acupuncture, and that the reticular structure of the brain stem is possibly the important region for implementing the regulatory action of acupuncture.

The Functional Activity of the Reticular Structure of the Brain Stem Is an Important Condition for Administering Acupunctural Anesthesia

So as to further observe the functions of the reticular structure of the brain stem in acupunctural anesthesia, we carried out laboratory experiments with animals to determine its analgesic effect.

We first observed the analgesic effect of acupunctural anesthesia for normal animals. Analgesic effects appeared in varying degrees in 43 of the 53 laboratory experiments with animals--the efficiency amounted to 82.7 percent and the induction time averaged 11 minutes 30 seconds. This result was very close to our clinical observation. This not only demonstrates that the analgesic effect of acupunctural anesthesia likewise functions in animals and affirms that it is possible to conduct experimental research with animals, but also strongly refutes the erroneous view that acupunctural anesthesia is merely a kind of so-called "psychological action."

Next, we separately injected into the animals different kinds of drugs that had different spheres of action on the nervous system--totalling ten kinds such as anesthetic, hypnotic, analgesic, sedative, stimulant and drug for the vegetative nervous system--and observed and compared the differences in the analgesic effects of acupunctural anesthesia before and after the use of such drugs. The results of these experiments showed that some drugs could strikingly strengthen the analgesic effect of acupunctural anesthesia, while some drugs could lead to the weakening or disappearance of the effect of acupunctural anesthesia. What is significant is that the

drugs with anesthetic and hynotic effect such as barbitone not only cannot strengthen the effect of acupuncture anesthesia, but leads on the contrary to the appearance of antagonism. Some drugs which have no analgesic effect can strikingly strengthen the effect of acupunctural anesthesia. Certain stimulant drugs, in particular, can also strikingly strengthen the effect of acupunctural anesthesia. This not only confirms the assumption that the changing of the functional condition of the central nervous system can affect the effect of acupunctural anesthesia, but also demonstrates that its analgesic effect is not implemented simply through inhibiting the central nervous system, but is based on most complicated principles.

Research in modern pharmacology points out that the aforesaid drugs which strikingly affect the analgesic effect of acupunctural anesthesia act mainly on regions in the reticular structure of the brain stem. For example, the action of anesthetic and hynotic drugs is mainly implemented through inhibiting or blocking the functional activity of the reticular structure of the brain stem. To give another example, of the different kinds of stimulant drugs selected by us for use in experiments, some mainly act on the cerebral cortex, some mainly act on the spinal cord, and some mainly act on the brain stem. Among these stimulant drugs, only the drugs which act on the brain stem can strikingly strengthen the analgesic effect of acupunctural anesthesia, but the other stimulant drugs produce no pronounced effect. It can be seen from this that the functional activity of the reticular structure of the brain stem is an important condition for implementing the effect of acupunctural anesthesia. When the functional activity of the reticular structure of the brain stem is inhibited, the analgesic effect of acupunctural anesthesia weakens or disappears, and when the excitability of the reticular structure of the brain stem rises to a higher level, the effect can be strengthened. Therefore, the selective use of suitable drugs for changing the functional condition of the reticular structure of the brain stem is probably a new way for improving the effect of acupuncture anesthesia.

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The great leader Chairman Mao teaches us: "Often, correct knowledge can be arrived at only after many repetitions of the process leading from matter to consciousness and then back to matter, that is, leading from practice to knowledge and then back to practice." The structure and functions of the human body are most complicated, and the action of acupuncture is also most complicated. In pointing out with emphasis the important function of the reticular structure of the brain stem in implementing the effect of acupunctural anesthesia, we do not mean to say that the functions of other regions and structures of the nervous system can be negated. Our work is only beginning, and neither the materials for conducting experiments nor the clinal observations made were complete and adequate. We can hardly avoid being subjective, one-sided and superficial, and from now on we must strive to raise standards in research. We are resolved to make unflagging efforts in the study of Chairman Mao's brilliant philosophical thought and to carry on our exploratory discussion of the clinical practice and theory of acupunctural anesthesia so that we may continuously strengthen the art and make it more perfect, contribute our share of strength toward creating China's unified new medicine, and better serve the broad masses of the workers, peasants and soldiers.

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Peking Hospital Medical Workers Discuss Acupuncture Anesthesia

(NCNA-English Peking, Feb. 26, 1972)

Staff members of the No. 3 Hospital attached to the Peking Medical College recently held a discussion about their clinical experience in acupuncture anesthesia and analyzed its special characteristics from various angles. Their speeches at the discussion follow:

Acupuncture Anesthesia Develops in Struggle

Chou Kuan-han (a leading member of the surgical department):

Acupuncture anesthesia is a new anesthetizing technique. Needling is used to stimulate a certain location of the body namely, one or several points, to make the patient feel soreness, distension, heaviness or numbness so as to induce analgesia and facilitate surgery. In the light of Chairman Mao's teaching "Chinese medicine and pharmacology are a great treasure-house, and efforts should be made to explore them and raise them to a higher level," China's medical and scientific workers have created acupuncture anesthesia on the basis of the Chinese people's abundant experience in using acupuncture to treat ailments and kill pain. Through constantly summing up experience, they have carried the new technique a step forward.

Inspired by the Party's general line of "going all out, aiming high and achieving greater, faster, better and more economical results in building socialism," our staff in 1958 studied the experience of other hospitals, started to investigate acupuncture anesthesia and undertake clinical practice and performed more than 30 operations under acupuncture anesthesia. But, this project was interrupted by Liu Shao-ch'i who pushed the counter-revolutionary revisionist line and spread such fallacies as "Chinese traditional medicine is not scientific" and "acupuncture anesthesia has no practical value."

During the great proletarian cultural revolution, we resumed our testing of acupuncture anesthesia under the guidance of Chairman Mao's revolutionary line. Under the leadership of the hospital revolutionary committee, we formed a special group and set up wards for this purpose. As a result, acupuncture anesthesia has made rapid progress in our hospital. We performed twelve hundred operations under acupuncture anesthesia in 1970 and 1971.

Acupuncture anesthesia has developed from needling only the body to many other methods including auricular needling and the combination of auricular needling and insertion of needles into points on other parts of the body. The scope of its application has been widened from a few simple minor operations to a variety of operations, including removal of the gall-bladder, uterus, cancer of the esophagus and part of the stomach, and operations on the limbs.

Characteristic Features of Acupuncture Anesthesia

Li Chao (Anesthetist):

My practice shows that acupuncture anesthesia does not need complicated apparatus. It is safe, simple, easy to master and costs practically nothing. Its application interferes very little with an operation and the patient regains his health quickly.

For patients with poor liver, kidney, heart or lung function, high blood pressure, or who are in a critical state or are over-sensitive to anesthetics, acupuncture anesthesia is safer than administering anesthetics.

A patient suffering from an extra-uterine pregnancy was sent to our hospital. Excessive bleeding and shock brought her blood pressure down. The pulse was weak and she was insensitive to external stimuli. A patient in such a condition is a poor anesthesia risk. She might become nauseous and have distention of the abdomen or other post-operative effects. Pneumonia and complications of the respiratory tract might occur. So we used acupuncture anesthesia. We inserted needles into acupuncture points and within five minutes her blood pressure rose. During the operation the patient felt all right, except when blood clots were manually removed from the abdomen. The operation was uneventful. The patient could take solid food the next day. There were no complications and the patient was discharged from the hospital on schedule.

Li Feng-ming (Opthalmologist):

Acupuncture anesthesia has proved effective in eye operations. It helps avoid edema of the tissues in the zone operated on. This is helpful in making an accurate incision on the conjunctiva. Post-operative side-effects are slight and the patient recovers quickly. When anesthetic is administered for an operation to correct squinting, success or failure is known only after the effects of the drug wear off. But when anesthetization is done by acupuncture, the patient's eyeballs can move freely and the doctor can ascertain the result of the operation then and there.

Chang Li-chu (A doctor in the gynaecology and obstetrics department):

I have been a teacher and doctor for over 20 years. I have performed various kinds of gynaecological and obstetric operations. Yet I was sceptical about using needles to induce analgesia.

I performed an operation under acupuncture anesthesia for the first time in 1970. At that time, acupuncture anesthesia was already popular in our hospital, but I was doubtful of its success. I was assigned an operation to tie up the oviducts. I prepared the necessary anesthetic so that if acupuncture anesthesia failed, I could use it. However, the operation was highly successful and the patient felt no pain during the operation. This gave me confidence. Later, some other doctors of our department and I applied the method in caesarean section, removal of ovarian tumors, uterectomy and other operations. All were successful.

Chang Tzu-shun (Surgeon):

Acupuncture anesthesia can make use of the initiative of both patients and medical workers. The patient is fully conscious during an operation under acupuncture anesthesia. Apart from dullness or insensitivity to pain, physiological function is normal. This enables the patient to cooperate with the doctors so as to insure the success of the operations. For instance, during a chest operation, the patient feels heavy pressure and has difficulty in breathing when his chest is opened. With the aid of acupuncture anesthesia, the patient can carry out deep, even abdominal breathing on the doctor's instructions and undergoes the operation with composure.

Li Mei-chih (Obstetrician-Gynaecologist):

When anesthesia is used the patient is completely passive during the operation. But when acupuncture anesthesia is used, surgeon, anesthetist and patient can work in close coordination. The surgeon acquaints the patient with the nature and course of the operation in advance to gain the patient's cooperation. Gynaecological operations require that the patient relax the muscles of the abdominal wall and breathe evenly. We on our part also have to pay more attention to the state of the patient than when anesthetics are used. Therefore acupuncture anesthesia places stricter demands on the medical workers, higher skill and a strong will to serve the people heart and soul. The operation must be performed with precision, steadiness, care and speed. Before the operation begins, the length and location of the incision is set. Thorough-going pre-operation examinations must be done if you want to avoid unnecessary probing on the table and achieve good results.

Chang Li-chu:

I have been to the countryside making rounds on a number of occasions. When we performed major operations, we had to call an ambulance from our hospital to bring us the necessary apparatus and anesthetics. Were there any unexpected mishaps, treatment would be delayed. I feel keenly that the countryside badly needs a simple method of anesthetization. Popularization of acupuncture anesthesia is of significance in carrying out Chairman Mao's great principle "Be prepared against war, be prepared against natural disasters, and do everything for the people" and his instruction "In medical and health work, put the stress on the rural areas."

Wang Su-chen (Head Nurse):

Patients under acupuncture anesthesia are easier to nurse. After the operation, they don't suffer from the side-effects common after the administering of anesthetics. An appendectomy under spinal anesthesia often gives the post-operative patient headaches, dizziness, abdominal distention and even retention of urine. It is even more difficult to nurse patients after operations with general anesthesia. On the other hand, patients after operation with acupuncture anesthesia can take food and move about earlier and recuperate faster.

Dare to Practice and Continue Advancing

Wang Kuan (Doctor in Charge of Acupuncture Anesthesia):

Acupuncture anesthesia is a brilliant example of the combination of Chinese traditional and Western medicines, and has many special features. But like other new things, it has raised some problems that still have to be solved. For instance, at certain stages in some operations, patients still feel some pain, and at some certain points the pain is still high; some patients feel uncomfortable when the internal organs are manipulated; and in some abdominal operations, the patient's abdominal muscles are not satisfactorily relaxed, and this creates difficulties for the operator.

Ma Li-hua (Acupuncture Anesthesia Doctor):

Acupuncture anesthesia is used in operations on all parts of the body in various parts of China, but our hospital still cannot use it for all operations. In some difficult operations with serious adhesion of intra-abdominal organs that call for extensive exploration, acupuncture anesthesia does not work well. But we are confident that these difficulties will be overcome.

Chou Kuan-han:

On the question of why acupuncture has an anesthetic effect, medical workers in various parts of the country have carried out much research and opinions and explanations vary. This question still remains to be solved through practice. We will make still greater efforts in studying Marxism-Leninism-Mao Tsetung Thought, conscientiously sum up our experience, continue our efforts in practice and raise anesthetic effectiveness, speed up the research into the reasons for the effectiveness of acupuncture anesthesia and perfect the technique so as to make still greater contributions to mankind.

* * *

The Relationship between the Functions of Meridians and Conduction through Nerves

by

the Department of New Medicine, No. 2 Hospital
of Wuhan Municipality

(Peking Kuang-ming Jih-pao April 2, 1972)

In regard to the knowledge of the principles of acupuncturel anesthesia, the most important debate at the moment is between the theory of meridians and the theory of nerves. The development of this debate will be most useful to looking into the principles of acupuncturel anesthesia, the combination of traditional Chinese medicine with Western medicine, the creation of China's new medicine, and the building of socialism. To be sure, this debate can be solved only through uninterrupted practice.

Two Examples of Success at the Rate of More Than 90 Percent

Since 1966, our hospital has carried out 2,600 operations in the departments of surgery, gynecology and obstetrics, the five sense organs and stomatology with the aid of acupuncturel anesthesia. The rate of success stands at over 90 percent and there has not been a single case of accident caused by acupuncturel anesthesia.

Among these 2,600 cases, 2,556 involved selecting spots along the meridians according to the theory of meridians for administering acupuncturel anesthesia, while 44 cases involved the deliberate inserting of needles into the nerve trunks that controlled the organs operated on. In both cases, the rate of success amounted to over 90 percent. Among the 2,556 operations done with acupuncturel anesthesia administered by selecting spots along the meridians, 1,145 cases were operations on the abdomen involving the stomach, the intestines, the vermiform appendix, hernia, the spleen, the gall bladder, the kidneys, the ureter, the urinary bladder, the prostate gland, the uterus, the ovarian tube, ovarian cyst, etc. The principal spots for administering acupuncturel anesthesia were the tsu-san-li spot (足三里), the san-yin-chiao spot (三陰交) and the kung-sun spot (公孙).

The 44 operations under acupuncturel anesthesia administered through the nerve trunks comprised the repair of hare-lip through inserting a needle into the infra-orbital nerve, surgery on the upper limbs by inserting needles into the brachial nerve plexus, and perineorrhaphy through inserting needls into the sacral nerve plexus.

Comparing Selecting Spots along Meridians with Inserting Needles into Nerve Trunks

"All true knowledge originates from direct experience."

Through the practice of acupuncturel anesthesia, we have derived some experience as described below:

The fact that good results are obtained in 2,556 cases of selecting spots along meridians among 2,600 cases under acupunctural anesthesia shows that the theory of meridians is of significance in guiding the practice of acupunctural anesthesia. Three principal spots--the tsu-san-li spot, the san-yin-chiao spot and the kung-sun spot--have in particular a more outstanding role to play in the 1,145 cases of abdominal operations through selecting spots along the meridians.

Everybody knows that the "three barriers" of acupunctural anesthesia--incomplete analgesia, muscular tone and reaction to visceral traction--are more difficult to deal with. But we managed to obtain better results through making organic coordinated use of the tsu-san-li, san-yin-chiao and kung-sun spots in abdominal surgical operations. For example, we obtained better results through manipulating the needles inserted into the san-yin-chiao and tsu-san-li spots at the same time to alleviate the tone of the abdominal muscles when the skin was incised. Before visceral traction developed in the abdomen or when the patient felt sick and wanted to vomit due to visceral traction, the intensification of the manipulation of the needles inserted into the kung-sun and tsu-san-li spots could do a better job in overcoming the phenomenon.

Can neurology properly explain these phenomena? No. The direct nerve links between the tsu-san-li, kung-sun and san-yin-chiao spots and the internal organs in the abdomen have still not been found. But the theory of meridians can be used to explain the internal connections between them. According to the theory of meridians, the tsu-san-li spot is affiliated with the stomach meridian, the kung-sun spot is affiliated with the spleen meridian, while the san-yin-chiao spot is the intersecting point for the liver, spleen and kidney meridians. The meridians of the spleen, the stomach, the liver and the kidneys are widely distributed in the superficial abdominal muscles, and they have ching-pieh (經別) that are connected with the visceral organs within the abdomen. "The abdomen stay with the san-li spot" and the tsu-san-li spot is the affiliated spot of the stomach meridian, the principal spot for administering acupunctural anesthesia in abdominal operations. The san-yin-chiao and tsu-san-li are mated because the former is in communication with the liver meridian and the vital energy of the liver is used to stop pain and alleviate the muscular tone. The kung-sun spot is matched with the tsu-san-li spot for the purpose of inhibiting belching and vomiting because the former is the spot of the spleen meridian and is linked with the ch'ung-mo (沖脉 impulse duct). These explanations have of course to wait for the further discovery of their accurate material base.

The fact that similar good results have also been obtained in the 44 operations done under acupunctural anesthesia administered through inserting needles into the nerve trunks shows that neurology has also an important role to play in the practice of acupunctural anesthesia. We discover, however, that when an operation on the thyroid gland is carried out, the nerve plexus in the neck is not as effective as the ho-ku (合谷) spot for acupuncture purposes, but no direct nerve connection has yet been found between the ho-ku spot and the thyroid gland. Nevertheless, the theory of meridians can be used to explain this phenomenon. The ho-ku spot is affiliated with the shou-yang-ming (手陽明) meridian of the colon,

and a branch of this meridian runs upward to the neck, thus establishing a connection. This shows that there is greater possibility and objectivity in explaining the principles of acupunctural anesthesia with the theory of meridians.

When we operated on the stomach by selecting spots along the meridian and were unable to solve the "three barriers" which we sometimes came across in acupunctural anesthesia, we accordingly inserted needles into the nerves between the 8th, 9th, 10th and 11th ribs that are related with the stomach, but failed to improve the effect of acupunctural anesthesia. This inversely shows that neurology is even less able to explain properly the principles of acupunctural anesthesia as compared with the theory of meridians.

Hypotheses Concerning the Relationship between the Functions of Meridians and Conduction through Nerves

By comparing the selecting of spots along the meridians with the insertion of needles into nerves for administering acupunctural anesthesia, we note with regard to the relationship between the functions of meridians and conduction through nerves: The functions of the meridians probably include conduction through nerves, while conduction through nerves is probably an important component of the functions of the meridians.

The possibility of the inclusion of conduction through nerves in the functions of the meridians can be explained by the practice of acupunctural anesthesia through inserting needles into the nerve trunks. For example, the insertion of needles into the infra-orbital nerves for the repair of hare-lip is equivalent to administering acupunctural anesthesia through inserting needles into the szu-pai (四白) spot. The szu-pai spot is affiliated with the tsu-yang-ming (足阳明) trunk meridian of the stomach which runs around the lips. The insertion of needles into the brachial nerve plexus for performing surgical operations on the upper limbs means in actual practice the insertion of needles deep into the chi-ch'uan (极泉) spot which is affiliated with the shou-shao-yin (手少阴) trunk meridians of the heart that run down the arms. The insertion of needles into the sacral nerve plexus for conducting perineorrhaphy means the insertion of needles into the yao-yü (腰俞) spot of the tu-mo (督脉) which is linked with the perineum. These nerves are all distributed within the sphere in which the meridians run, and the functions of these meridians probably include conduction through these nerves. Consequently, our hypothesis is that the functions of the meridians probably include conduction through nerves.

Why not say that conduction through nerves includes the functions of the meridians? This is because certain phenomena we have brought up in the practice of acupunctural anesthesia described above--for example, the functions exhibited by the tsu-san-li, san-yin-chiao and kung-sun spots, the three principal spots for administering acupunctural anesthesia in abominal surgery--can be explained with the theory of meridians, but cannot be properly explained with neurology. Conversely, the action of acupunctural anesthesia caused by the deliberate stimulation of the nerve trunks can also

be explained with the theory of meridians. It is therefore said that the functions of meridians probably include conduction through nerves, but conduction through nerves cannot include the functions of meridians.

Next, why the hypothesis that conduction through nerves is probably an important component of the meridians?

The sensation of te-ch'i* cannot be derived when patients suffering from paraplegia are treated with acupuncture, or when acupuncture anesthesia is administered after the blocking of the nerve trunks. This is because paraplegia has severed the important meridians of the patients, and since the meridian energy cannot pass through them, the patients cannot derive the sensation of te-ch'i when given acupuncture. When acupunctural anesthesia is administered after the blocking of the nerve trunks, the meridian energy cannot pass through freely due to the blocking of the important meridians, and as a consequence, acupunctural anesthesia cannot produce the sensation of te-ch'i. Therefore, the inability to derive the sensation of te-ch'i when patients suffering from paraplegia are treated with acupuncture or when acupuncture is administered after the blocking of the nerve trunks not only cannot reject the theory of meridians but serves precisely to show that conduction through nerves is probably an important component of the functions of the meridians.

Again, when the distribution of the nerves is set in contrast to the routes followed by the meridians and the positions of the spots, the fact that the distribution of the nerves has something to do with the majority of the spots is also of benefit to show that conduction through nerves is probably an important component of the functions of the meridians.

The results of inserting needles into the nerve trunks closely resemble those of picking spots along the meridians, and in both, the rate of success amounts to over 90 percent. This precisely shows that conduction through nerves is probably a most important component of the functions of the meridians. The two examples of success at the rate of over 90 percent are not contradictory.

Besides conduction through nerves, do the other functions of the meridians truly exist? It they do, how?

First, they probably exist. For example, of the phenomena exhibited by the meridians that make it possible for us to carry out successfully gastrotomy, the portion that is still not understood by people can only be explained with the functions of the meridians. Again, after given a long course of treatment with acupuncture, the paralyzed limbs of the patients suffering from paraplegia can be rehabilitated to a certain extent. This can be due to the rectification of the paralyzed important merdians (or nerve trunks) by the acupuncture therapy, and it is also possible that the rectification is effected by that portion of merdians whose functions are still not understood by people. Therefore, the functions of the meridians probably exist.

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* See explanatory note on page 12. - CB Ed.

Then, how do they exist and what is their material base? Is it biological electric current, body liquid, or something else? This is a question we must strive to study and understand from now on. The continued study and understanding of this question will be beneficial not only to the strengthening and improvement of the theory of meridians but also to the development of neurology.

The hypothesis that the functions of the meridians probably include conduction through nerves, and conduction through nerves is probably an important component of the functions of the meridians is not contradictory no matter whether it is viewed from the theoretical system of traditional Chinese medicine or the theoretical system of modern medicine.

Therefore, the functions of the meridians are, generally speaking, for maintaining communications between the external and the internal, for keeping the blood and vital energy in harmony. In physiological anatomy, the meridians should be channels that are "externally connected with the limbs and internally affiliated with the internal organs"; they are linked with but are different from the internal organs and the limbs. Speaking as a whole, however, the meridians are under the control of the five internal organs headed by the heart. Therefore, the functions of the meridians are brought into play under the guidance of the five internal organs and especially of the heart.

The same is also true with conduction through nerves. The functions of the nerves are for conducting the sensory impulse and motor impulse between the corresponding regions of the cerebral cortex and the receptors and effectors. In physiological anatomy, the nerves are channels between the corresponding regions of the cerebral cortex and the receptors and effectors. In other words, they are the afferent and efferent nerve tissues that are linked with but are different from the corresponding regions of the cerebral cortex and the receptors and effectors. Speaking as a whole, however, the functions of conduction through nerves are brought into play under the guidance of the cerebral cortex.

It can be seen from such comparisons that the functions of the meridians in maintaining communications between the external and the internal are identical with and not contradictory to the functions of conduction through nerves. Furthermore, the "dominant factor of the heart [mind]" and the action of the cerebral cortex are also identical and not contradictory. However, the "dominant factor of the heart [mind]" also embraces a greater number of aspects--for example, the physiological anatomy of the arteries and veins, the intestines, the tongue, etc.

Therefore, it cannot be held that the hypothesis that the functions of the meridians probably include conduction through nerves and that conduction through nerves is probably an important component of the functions of the meridians means the negation of the functions of the cerebral cortex. On the contrary, it affirms precisely the action of the cerebral cortex.

The Principles of Acupuncture Anesthesia as Seen from a Comparison between Extradural Anesthesia and Acupuncture Anesthesia in Splenectomy

According to our experience, when splenectomy is carried out under extradural anesthesia, the patient has no sensation of pain when the spleen is removed, but he feels pain in the left shoulder. However, when splenectomy is carried out under acupuncture anesthesia, the patient has no sensation of pain when the spleen is removed, nor does he feel any pain at the left shoulder.

Why is there a difference in pain at the left shoulder between these two kinds of anesthesia?

This is because when the 8th, 9th and 10th sections of the thoracic vertebra are under the condition of extradural anesthesia, conduction through the relevant nerves between the cerebral cortex and the spleen is blocked and cut off, and therefore, there is no sensation of pain when the spleen is removed. However, the removal of the spleen stimulates the diaphragm muscle and gives rise to the sensation of pain at the left shoulder through the reflex of the fourth cervical nerve--because conduction between the diaphragm muscle and the cerebral cortex has not been blocked and cut off. Hence, the phenomena of no pain when the spleen is removed but pain at the left shoulder.

When acupuncture anesthesia is administered in splenectomy, needles are inserted into the tsu-san-li, kung-sun and san-yin-chiao spots. Due to the activity of the meridians, the functions of the meridians between the "dominant factor of the heart [mind]" are manifested in the harmony of the meridian energy and the free circulation of vital energy and blood, and hence there is no sensation of pain when the spleen is removed. The functions of the meridians between the "dominant factor of the heart [mind]" and the diaphragm muscle--the left shoulder--are also manifested in the harmony of the meridian energy and the free circulation of vital energy and blood, and therefore, no sensation of pain appears at the left shoulder due to the reflex of the stimulation of the diaphragm muscle.

By comparing the manifestations of extradural anesthesia and acupuncture anesthesia in splenectomy, two problems can be noticed:

First, the common manifestation of both extradural anesthesia and acupuncture anesthesia in splenectomy is that there is no pain when the spleen is removed. But this common characteristic reflects the different nature of the two kinds of anesthesia. This is because while analgesia is manifested through the blocking of conduction through nerves in extradural anesthesia, analgesia is manifested in the opposite way in acupuncture anesthesia; it is effected not through blocking the meridians, but through the harmony of the meridian energy and the free circulation of vital energy and blood. This shows that analgesia in extradural anesthesia is caused by blocking, while analgesia in acupuncture anesthesia is brought about by free circulation. The former involves negative blocking, while the latter involves positive regulation.

Second, the difference between extradural anesthesia and acupunctural anesthesia in splenectomy is manifected respectively by pain and no pain at the left shoulder. This difference also reflects that while these two kinds of anesthesia bear some resemblance in appearance, they are actually of different nature. This is because the cause of pain at the left shoulder in extradural anesthesia is the free flow of conduction through the nerves between the cerebral cortex and the diaphragm muscle--the left shoulder; but it is also due to the free flow through the meridians that there is no pain at the left shoulder under acupuncture anesthesia. Both pain and analgesia are due to free flow and the two types of free flow appear to be the same. However, the free flow that leads to pain at the left shoulder in extradural anesthesia results from not having blocked conduction through the nerves, while the free flow that causes no pain to the left shoulder in acupunctural anesthesia results from positive regulation through inserting needles into the tsu-san-li, kung-sun and san-yin-chiao spots. Consequently the two types of free flow are of different nature.

It can be seen from this that different from extradural anesthesia, the positive regulatory action of acupunctural anesthesia constitutes the principle of acupuncture anesthesia.

How then does the regulatory action of acupunctural anesthesia operate? The surgical operation blocks the corresponding meridians, and the blocking leads to pain. The administering of acupunctural anesthesia at the corresponding spots restores the free flow of vital energy and the harmony of vital energy and blood in the corresponding meridians, and because of the free flow, there is no pain. Therefore, the process of the regulatory action of acupunctural anesthesia is a process of struggle between free flow and blocking, and this process is regulated under the command of the "dominant factor of the heart [mind]". As regards what constitutes the material base of free flow and what constitutes the material base of blocking, this can be answered only after the material base of the meridians as a whole has been clarified.

Through comparing extradural anesthesia and acupunctural anesthesia in splenectomy, it can also be seen that the corresponding sphere of the regulatory action of acupunctural anesthesia embraces at least three aspects:

1. Conduction through the nerves between the tsu-san-li, kung-sun and san-yin-chiao spots and the cerebral cortex, and conduction through nerves between the nerves related to the abdominal operation and the cerebral cortex.

2. Conduction through the nerves between the spleen and the cerebral cortex.

3. Conduction through the nerves between the diaphragm muscle-left shoulder and the cerebral cortex.

This once again demonstrates that this hypothesis--that the functions of the meridians probably include conduction through nerves and that conduction through nerves is probably the most important component of the functions of the meridians--is within the bounds of possibility. To be sure, these questions have yet to be solved through making more deep-going practice, study and enhancement of knowledge.

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Phenomena of Meridians and Acupunctural Anesthesia

by

the Acupunctural Anesthesia Unit of the Revolutionary Committee of the No. 1 Hospital for Preventive Treatment, Hungch'iao ch'U, Tientsin Municipality

(Peking Kuang-ming Jih-pao April 2, 1972)

The Phenomena of Meridians and the Peculiarity of Spots

Chairman Mao teaches us: "Correct ideas come from social practice and from it alone; they come from three kinds of social practice--the struggle for production, the class struggle and scientific experiment." Based on what we have learned from experience in the practice of more than 1,000 operations carried out under acupunctural anesthesia and in testing the insertion of needles into our own bodies, we are deeply impressed by the peculiar sensation of ambulation along a certain meridian after the sensation of te-ch'i (得 氣)* is obtained following the insertion of needles into spots. This kind of sensation is generally described as the sensation of conduction along the meridian or the echo of the needle.

Recalling what he sensed after he was given acupunctural anesthesia, a doctor said: The insertion of a needle into the ear spot called shen-hou (腎 后) produced a strange sensation that spread all the way along the pathway of the tsu-yang-ming (足 陽 明) trunk meridian down to the lower limbs, and this sensation lasted for a long while. Another doctor who had been operated on under acupunctural anesthesia said that whenever the operating process was intensified slightly, the spot in the ear that bore the needle was at once sensitive to pain. These sensations most symbolically portray the internal relations of the meridian spots and the organs.

In the course of inserting needles into the patients, we often discovered the appearance of sclerosis, pimples, pigmentation and other changes in the regions of the corresponding spots in sympathy with the ailments of the internal organs. We tested the sensitivity of the relevant spots under radioactive rays, and discovered that in eighteen cases involving patients suffering from gastric ulcer, after a needle was inserted into the tsu-san-li (足 三 里) spot, the vermicular motion of the stomach quickly strengthened, and there was relief in pylorospasm. But the stimulation of other spots did not produce similar results. In addition, we also determined the electric conductivity of the spots and meridians of the patients in 125 cases and obtained affirmative results. The above practice demonstrates that the phenomena of meridians and the relative peculiarity of spots are facts in objective existence and have their internal laws. This has yet to be bared to greater depth and applied in the practice of acupunctural anesthesia and the acupuncture-moxibustion therapy.

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* See explanatory note on page 12. - CB Ed.

What Are in Essence the Phenomena of Meridians?

First, it is necessary to discuss how the ancient people began to recognize the phenomena of the meridians and gradually delineated a complete set of pathways followed by the meridians. At first, the ancient people discovered a few sensitive positions (spots) through the practice of simple acupuncture and massage. Subsequently, through repeated practice of acupuncture on numerous occasions, they discovered even more spots and gradually delineated many pathways that conducted the echoes of the needles. These pathways were in turn reinforced and developed through the practice of deep breathing, and it was learned from experience that the pathways these spots followed were inter-related to form a complicated but complete system of the twelve trunk meridians and of the eight peculiar trunk meridian ducts (奇經八脉).

In "A Study of the Peculiar Trunk Meridians Ducts," Li Shih-chen (李时珍) mentioned that "the inhaling channel is used for the return trip, and observers can detect this." This refers to the ability in experiencing the circulation of "ch'i" (气 probably meaning vital energy--translator) through the jen (任) and tu (督) ducts and the twelve meridians (that is what are called the "minor cycle" and the "major cycle"). Again, in "Tapping the Fourteen Trunk Meridians" Hua Po-jen (滑伯仁) recorded the passage: "The branches of tsu-shao-yang (足少阳) travel from the liver through the diaphragm upward to the lungs. After entering the throat, they ascend to the forehead at the peak through the tu duct and branch into the yin-ch'i (阴器). They then pass through the mao-chung (毛中) through the jen duct, enter the ch'ueh-p'an (缺盆), descend to the lungs and return to the shou-t'ai-yin (手太阴).

It is only possible to verify such meridian connections described from the conduction of the echoes of the needles, but there is fundamentally no way to find out any basis in modern anatomy. It can be seen from the ancient people's process of knowing the meridians described above that the meridians themselves are actually the pathways of a kind of function summed up from direct experience. The medical workers of all ages had striven to look for an anatomical basis for such a kind of function. Therefore, there arose all kinds of far-fetched versions, thus bringing confusion of all descriptions to posterity. Upon to now, many people are still striving to find out a single material pathway of a special structure for this function of the "meridians."

As a matter of fact, if the viscera are grasped with reference to traditional Chinese medicine, the above confused understanding is not difficult to clarify. However, due to the limitations of the conditions of the times, and because of the lack of fine anatomical knowledge in the course of development of traditional Chinese medicine, it must be admitted that the description of the viscera in medical books of ancient times is at great variance with modern knowledge. For example, traditional Chinese medicine regards the kidneys as the basis of anatomy, and the functions of the kidneys described are far in excess of modern physiological anatomy's exposition of the kidneys. What traditional Chinese medicine describes as the functions of the kidneys embrace the complicated functions of urination,

reproduction, the vegetative nervous system, and the endocrine secretion of the adrenal gland. Traditional Chinese medicine even distinguishes the right and left kidneys into renal liquid and fire of life.

In order to clarify what is in essence this functional pathway of the meridians, we have observed the sensitivity of the spots to drugs in more than 300 cases, and inspected the changes in the electric conductivity of the meridian spots after administering various kinds of anesthesia. We have discovered that various kinds of drugs that react on the nervous system or the choline body fluid have a pronounced effect on the phenomenon of the electric conductivity of meridian spots. In addition to this, we have also discovered that after te-ch'i is effected through acupuncture, the direction and velocity of sensory conduction are greatly different from the sensation produced by direct stimulation around the nerve trunks, and that the velocity of the echo of the needle is far slower than conduction through the peripheral nerves but is close to the rate of movement of stimulation among the nerve cells of the cerebral cortex. The direction of conduction of the sensation of the echo of the needle is also different from that of the peripheral nerves, and the sensation often moves into the meridians in the vicinity. We surmise from this that the echo of the needle is not necessarily the local sensation of the region through which the meridians pass, but is possibly the movement of stimulation caused by acupuncture as reflected by that region in the cerebral cortex.

As is often the case, the amputees sometimes complained of pain or the sensation of spasm or formication in the amputated limb, but the sensation actually did not occur at the affected limb. In other words, after needles are inserted into the spots, an abnormal excitatory substance is produced in the cerebral cortex, and the excitation diffuses from there in certain directions. Although the excitation no longer stimulates the end receptors, a subjective acupuncturel sensation of continued movement will also be produced. After studying the correlation between the region in front and behind the central groove of the cerebral cortex and the known region under the jurisdiction of the sensory region, it can be seen that the fundamental sections of the region of cortical reflex that are arranged according to the order of the twelve meridians adjoin each other, but are not separated from each other in disorder. This shows that when excitation emits from a certain point in the sensory region of the cortex and diffuses through fixed pathways adjoining it, it is entirely possible to give rise to the sensation of the conduction of the echo of the needle through the nerves. Some people have proved that after the spots are blocked by means of local anesthesia, it is no longer possible to induce the sensation of te-ch'i and the echo of the needle. This also shows the indivisible relations of the functions of the meridians and the nerves.

According to the above analysis, our preliminary opinion is that the phenomena of the meridians represent a kind of pathways of the unconditioned reflex of the inherent body fluid of the nerves. Their basic structure comprises predominantly the motor region and the sensory region in front and behind the central groove of the cerebral cortex and extends downward to embrace the interbrain optical mound, the spinal nerves, the vegetative nerves, and even the complicated system of various kinds of endocrine body fluid systems below the pituitary gland. The viscera and the body surface are

linked with each other according to the order of the meridians to become the receptive field of the reflex and the effective appliance.

Everybody knows that when the sense organs of the body surface of a higher animal are repeatedly and continuously given a certain kind of stimulation, the inhibition of the region of reaction in the cerebral cortex will be triggered in the end. The sharp diffusion of such inhibiting process can encroach upon the two hemispheres and other regions of the cerebrum and descend to various sections at the lower part of the cerebrum. This is essentially a form of protective inhibition and can result in changing the animal's sensation of pain. The animal can be made to sense no pain when given stimulation which originally would give rise to pain, or to have sensation of pain when given stimulation which originally would not produce pain. We are therefore of the opinion that in the process of acupunctural anesthesia, after needles are inserted into the spots, such local stimulation is conducted upward through the aforesaid pathways of meridian functions to the cerebral cortex (and various lower centers). This gives rise to a series of inhibitory processes, and hence raises the threshold of pain of the functions of the effective appliances of the various internal organs concerned, and produces a pronounced analgesic effect against the stimulation caused by surgery. To be sure, when other regions other than the known meridian spots are given sustained and proper stimulation, a similar inhibitory effect can also be produced--for example, "the administering of anesthesia through stimulating points at random." But on the whole, the stimulation of the sensitive spots yields better results and is easier to insure the success of acupunctural anesthesia. On the other hand, the intensity of stimulation applied on the region operated upon is also bound to affect the acupunctural anesthesia. We are clinically aware that the fewer the number of spinal nerves are involved in the region covered by surgery--for example, the head, the neck or the chest--the better will be the effect of acupunctural anesthesia.

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